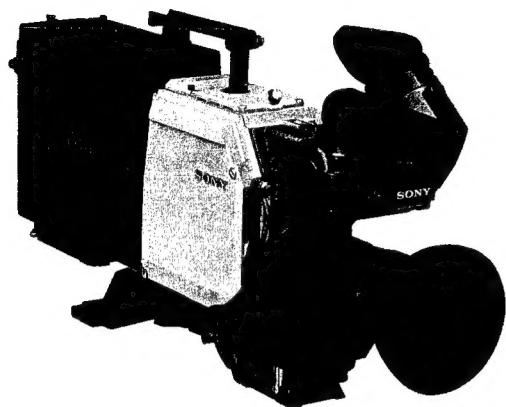


SONY®

COLOR VIDEO CAMERA

BVP-3AP



BETACAM™

OPERATION AND MAINTENANCE MANUAL

2nd Edition (Revised 5)

Serial No. 21901 and Higher

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Components identified by shading and  marked on the schematic diagrams and parts list are critical to safe operation. Replace these components with SONY parts whose part numbers appear as shown in this manual or in supplements published by SONY.

X-RAY RADIATION WARNING

Be sure that parts replacement in the high voltage block and adjustments made to the high voltage circuits are carried out precisely in accordance with the procedures given in this manual.

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SECTION 1

OPERATION

The BVP-3AP is a compact and lightweight color video camera with a three-pickup tube system employing 2/3-inch Magnetic focus-Static deflection Saticon* tubes. When the BVP-3AP is used together with a BVV-1PS/BVV-1APS portable video cassette recorder, a Betacam system BVW-3P/BVW-3AP for ENG (Electronic News Gathering) is created, making it possible for camera recording to be done by a single person.

* Saticon is a trademark.

1-1. FEATURES

High quality picture

The Magnetic focus-Static deflection tubes have the following features and assure a high quality picture.

- The high resolution can be obtained at any portion on the screen.
- The deflection distortion is low and the precise registration is possible.
- The diode-gun Saticon (R) tubes and the high-voltage operation assure the clear picture.
- The signal is output through the connector pins and the first-stage FET is built-in the coil for the high signal-to-noise ratio.

Compact and lightweight

The magnesium diecast body is light and rigid. The compact design and lightweight makes the BVP-3AP easy-to-operate camera.

High sensitivity

The video output level can be raised by 9 dB or 18 dB. Even at the 18 dB position, a high quality picture is assured so that the recording under low light conditions will be possible.

Automatic white balance and black balance/preset white balance

The white balance and black balance can be automatically adjusted at each filter position, and the adjusted value is stored in the memory even when the power is turned off. When the WHITE BAL switch is set to PRESET, a white balance at 3200°K is obtained.

Automatic centering adjustment

Thanks to the newly developed automatic centering adjusting circuit, the centering can be easily adjusted without using the centering pattern. The adjusted value is stored in the memory even when the power is turned off.

Automatic beam-optimizer

An automatic beam-optimizer allows the camera to accept excessive light input of up to 8 times that of normal conditions without comet tail or blooming effects.

Wide dynamic range

The BVP-3AP has realized wide dynamic range to accept excessive light input of up to 6 times that of normal condition with the incorporated DCC (Dynamic Contrast Control) circuit.

Warning system

If there is a problem on the VTR or the tape or the battery is to end, the warning lamps in the viewfinder indicate it. When the BVP-3AP is used together with the BVV-1PS/BVV-1APS, the warning sound is heard and the tape remaining time indicators in the viewfinder will function.

Auto-close mechanism

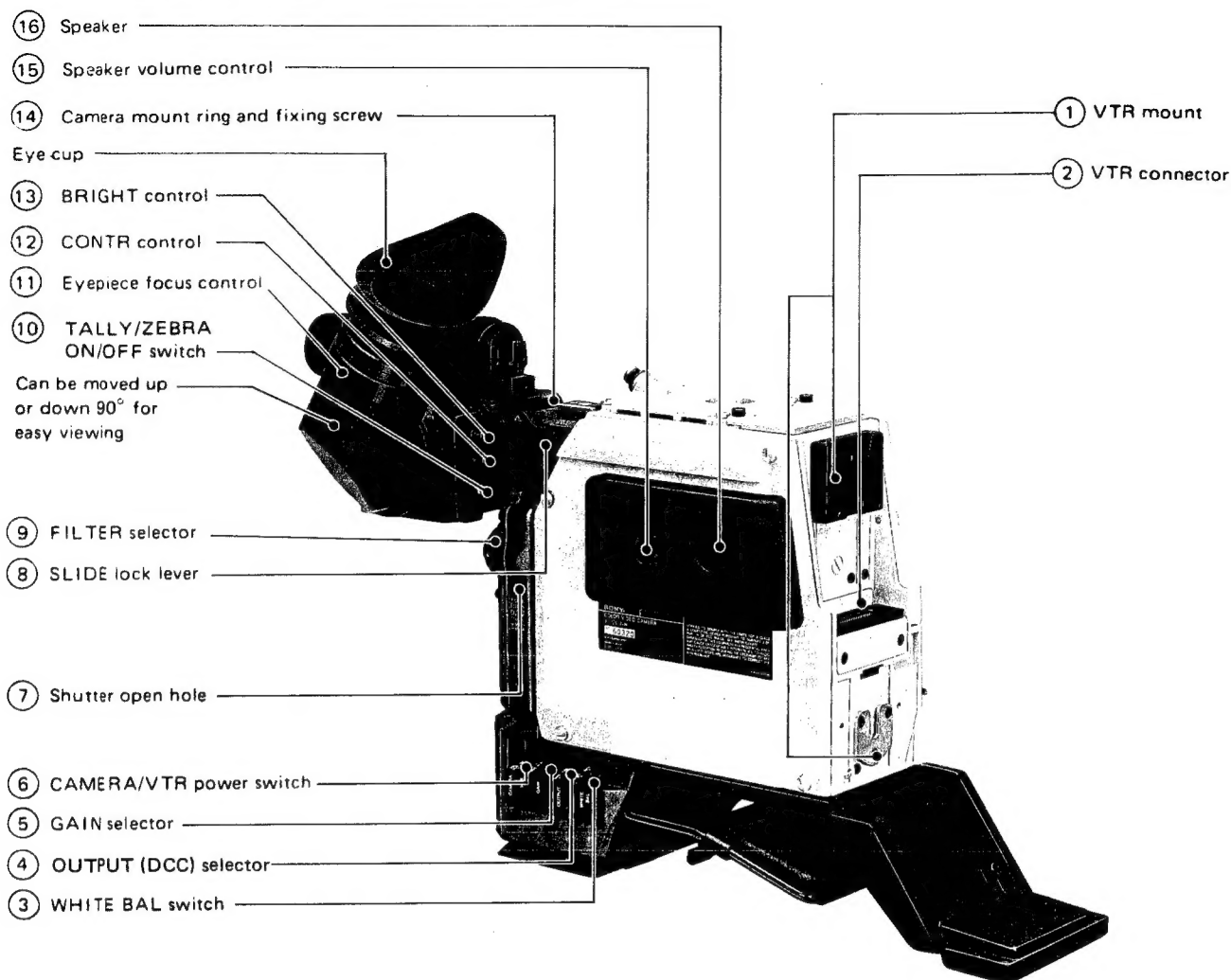
The shutter is automatically closed to protect the pickup tube in the following cases.

- When the CAMERA/VTR switch is set to PREHEAT
- When the OUTPUT switch is set to BARS
- While the automatic black balance adjustment is being performed
- When the test signal is output
- While the tape is being rewound

In addition to the above, the BVP-3AP has the following features.

- Low power consumption
- Colour framing pulse output when the camera is operating with the internal sync system.
- Gen lock function when the CA-3 or CA-30P camera adaptor is used
- 2 line image enhancer
- Shading compensator to use the lens extender
- Masking circuit
- Split color bar generator
- Sharp-directional microphone
- Automatic iris adjustment mechanism
- Video level indicator
- Adjusting the audio recording level of audio channel 1
- Zebra pattern ON/OFF switch
- Built-in monitor speaker
- Attaching an external microphone
- High resolution viewfinder

1-2. LOCATION AND FUNCTION OF PARTS



① VTR mount

Mount a BVV-1PS/BVV-1APS portable videocassette recorder, CA-3 or CA-30P camera adaptor, etc.

② VTR connector (50 pin)

Connect the 50-pin connector of the BVV-1PS/BVV-1APS videocassette recorder, CA-3 or CA-30P camera adaptor, etc.

③ WHITE BAL (balance) switch

PRESET: The white balance is set at the factory to the value of 3200°K with the FILTER selector ⑨ set to "1", the white balance of the iodine lamp. Use this position when you have no time to adjust the white balance.

AUTO: Generally set to this position. When the AUTO W/B BAL switch ③ is set to WHT, the white balance will automatically adjusted and memorized. After the adjustment, the memorized white balance value is always obtained at this position.

④ OUTPUT (DCC) selector

Selects the signal output from the VTR connector ②, or TEST OUT connector ②② and to the viewfinder.

CAM: Signal picked up by the camera.

At the DCC ON position, the built-in DCC circuit functions.

When the DCC circuit is not used, set the selector to DCC OFF.

BARS (DCC OFF): Color bar signal. Set at this position to use the color bars to adjust the video monitor or to record the color bars.

⑤ GAIN selector

Generally set this selector to "0". When the selector is set to "9" or "18", the video output level will be raised by 9 dB or 18 dB respectively.

⑥ CAMERA/VTR power switch

Turns on and off the power to the camera and the videocassette recorder.

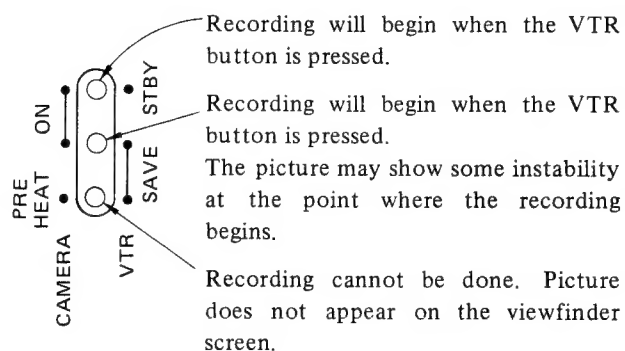
CAMERA-PREHEAT: Power is supplied to the pickup tube and the heater of the picture tube in the viewfinder but the picture does not appear on the viewfinder screen.

The power consumption is reduced at this position.

CAMERA-ON: The power is supplied to all part of the camera and the picture appears on the viewfinder screen.

VTR-SAVE: The head drum stops rotating and the tape is unthreaded. Because the power consumption is reduced at this position, the recording time will be longer.

VTR-STBY: The head drum starts rotating and the tape is threaded around the drum head.



⑦ Shutter open hole

This hole is equipped to force the shutter to open by breaking it when the shutter does not open in normal operation. If the shutter does not open during operating the camera, check that the power supply circuit works correctly and that the connections are correct. If the shutter still does not open after checking the above items, remove the rubber cap and push in a thin stick like a thin screwdriver, and the shutter will open.

After opening the shutter with this method, be sure to contact your Sony personnel.

⑧ SLIDE lock level

Turn the lever clockwise and the viewfinder is locked. Turn the lever counterclockwise to release the lock and the viewfinder can be moved horizontally to be adjusted the position for easy-viewing.

⑨ FILTER selector

Select the appropriate filter according to the lighting conditions.

Filter number	Color temperature	Lighting conditions
1	3200° K	sunrise, sunset, in a studio
2	5600° K + 1/4 ND*	bright outdoors
3	5600° K	cloudy or rainy outdoors
4	5600° K + 1/16 ND*	clear and bright scenery of snow, high mountains or seaside

* ND: neutral density filter

⑩ TALLY/ZEBRA ON/OFF switch

ZEBRA TALLY: The zebra pattern and tally lamp are turned on.

OFF: The zebra pattern and tally lamp are turned off.

ZEBRA: The zebra pattern is turned on, and the tally lamp is turned off.

⑪ Eyepiece focus control

Adjust this control so that the clearest picture can be obtained on the viewfinder screen.

- This control does not affect the output signal of the camera.

⑫ CONTR (contrast) control

Adjusts the contrast of the picture on the viewfinder screen.

- This control does not affect the output signal of the camera.

⑬ BRIGHT (brightness) control

Adjusts the brightness of the viewfinder screen. To obtain a brighter picture, turn this control clockwise.

- This control does not affect the output signal of the camera.

⑭ Camera mount ring and fixing screw

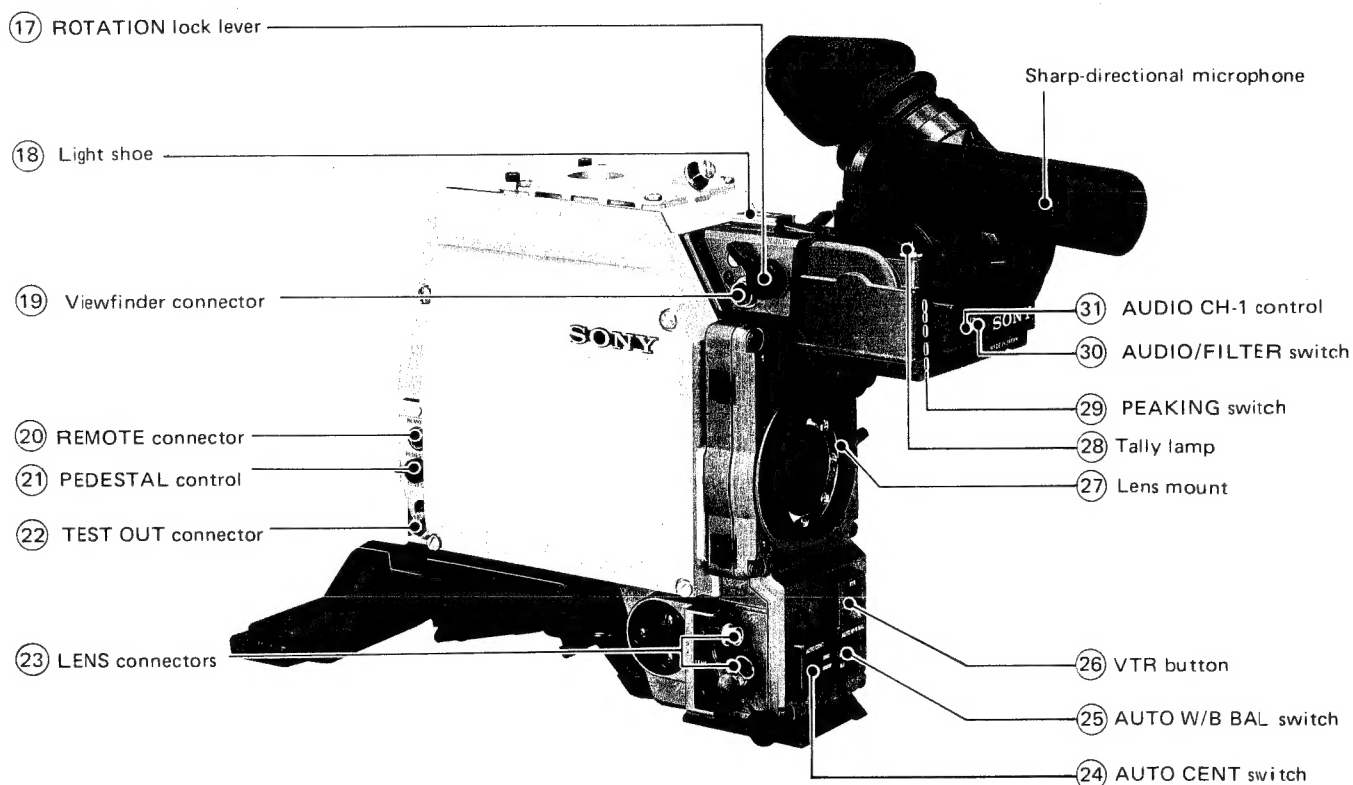
Generally do not remove the viewfinder from the camera. If it is unavoidable to remove the viewfinder, loosen the fixing screw and turn the mount ring clockwise from the lens side, and pull the viewfinder. To mount the viewfinder again, turn the mount ring counterclockwise and be sure to fasten it with the fixing screw securely.

⑮ Speaker volume control

Adjusts the sound level from the speaker. Turning the control to clockwise increases the sound volume. At the fully counterclockwise position, no sound can be heard.

⑯ Speaker

During recording, simultaneous playback sound (mixed sound of the audio channels 1 and 2) can be monitored. In other mode, the E-to-E sound selected on the VTR can be heard. The sound corresponding to the warning lamps is also heard.



17 ROTATION lock lever

Turn the lever down to lock the viewfinder. Turn the lever counter-clockwise to release the lock, and the viewfinder can be rotated.

18 Light shoe

Attach a video light, etc.

19 Viewfinder connector (12 pin)

Connect a BVF-50 viewfinder.

- When a viewfinder is connected to this connector, be sure to remove the supplied 1.5-inch viewfinder from the camera. Do not connect two viewfinders simultaneously.

20 REMOTE connector (6 pin)

Connect the appropriate equipment to remotely control the fine adjustment of the iris, pedestal level and gain.

21 PEDESTAL control

Adjusts the pedestal level.

22 TEST OUT connector (BNC type)

The following signals selected by the ENC/REG switch on the built-in circuit board will be output.

REG: R, G, B, R-G or B-G test signal selected by the R/OFF/B and the G/OFF/-G switches is output.

ENC: Encoded video signal is output. Usually use this position.

23 LENS connectors (6 pin, 12 pin)

Connect a cable of the lens to the appropriate connector, 6 pin or 12 pin.

For details on the usable lenses, consult your Sony personnel.

②4 AUTO CENT (automatic centering adjustment) switch
PRESET: Use this position when the memorized centering value is not used.

MEMORY: Use this position when the memorized centering value is used after the automatic centering adjustment.

START: For automatic centering adjustment, point the camera to an appropriate object and set this switch to START. The switch automatically returns to the center position when the switch is released.

②5 AUTO W/B BAL (automatic white/black balance adjustment) switch

WHT: For automatic white balance adjustment, set the WHITE BAL switch ③ to AUTO and set this switch to WHT. The adjusted value will be automatically memorized.

BLK: For automatic black balance and black set level adjustment, set this switch to BLK. The adjusted value will be automatically memorized.

- The switch automatically returns to the center position when it is released after setting the switch to WHT or BLK.

②6 VTR button

Press to start recording. To stop, press this button again. This button functions the same as the VTR button on the lens. To use this button, remove the cover.

②7 Lens mount (special bayonet type)

Attach the lens.

②8 Tally lamp

This lamp lights or blinks when the REC lamp on the viewfinder lights or blinks.

②9 PEAKING switch

The outline of the picture on the viewfinder is enhanced so that the focus can easily be adjusted. Every time the switch is pressed, the function is turned on and off alternately.

③0 AUDIO/FILTER switch*

AUDIO: Use this position when the recording level of audio channel 1 is adjusted by the AUDIO CH-1 control. The FILTER/AUDIO indicator in the viewfinder shows the audio recording level.

FILTER: The FILTER/AUDIO indicator in the viewfinder shows the number of the filter selected by the FILTER selector. When the camera is used together with the machine except for the BVV-1PS with the serial No. 50000 or higher or BVV-1APS, be sure to set the switch to this position.

③1 AUDIO CH-1 (audio channel-1 recording level) control*

When the AUDIO CH-1 MANU/AUTO selector on the BVV-1PS/BVV-1APS is set to MANU and the AUDIO/FILTER switch ③0 is set to AUDIO, the recording level of audio channel-1 can be adjusted manually. Adjust the level during observing the FILTER/AUDIO indicator in the viewfinder.

* These switch and control are effective only when the BVP-3AP is used together with the BVV-1PS with the serial No. 50000 or higher or with the BVV-1APS.

Indicators in the viewfinder

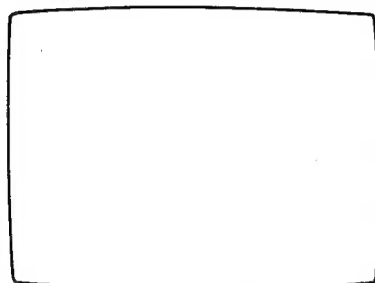
Tape remaining time indicators

Show in minutes the amount of tape remaining for recording. These indicators function only when the BVP-3AP and the BVV-1PS/BVV-1APS are directly connected with the 50-pin connectors.

10M 5M
TAPE

REC

BATT



FILTER/AUDIO

1 2 3 4

GAIN

UP

W/B

CENT

REC (recording) indicator (red)

Lights during recording, and blinks when one of the warning lamps on the BVV-1PS/BVV-1APS blinks or lights. For details, refer to the instruction manual furnished with the connected VTR.

BATT (battery) indicator (red)

The indicator starts blinking several minutes before the battery is discharged to the level which cannot perform the operation of the camera, and keep lighting at that level.

W/B CENT (white balance/black balance/centering) indicator (orange)

Lights when the automatic white balance, black balance and centering adjustment has been completed and goes off after 5 seconds. If the automatic adjustment cannot be done, the indicator blinks for about 5 seconds.

GAIN UP indicator

Lights when the GAIN selector is set to "9" or "18".

FILTER/AUDIO indicator

When the AUDIO/FILTER switch is set to AUDIO, the audio level is indicated. When the switch is set to FILTER, the number of the filter selected by the FILTER selector lights.

Tape remaining time indicators and the remaining time

These indicators function only when the BVP-3AP and the BVV-1PS/BVV-1APS are directly connected with the 50-pin connectors.

Remaining time (minutes)	20	15	10	5	2	0
Indicators	10M 5M	10M	5M	5M		
REC indicator	REC					REC*



: Blinks in 1 Hz interval

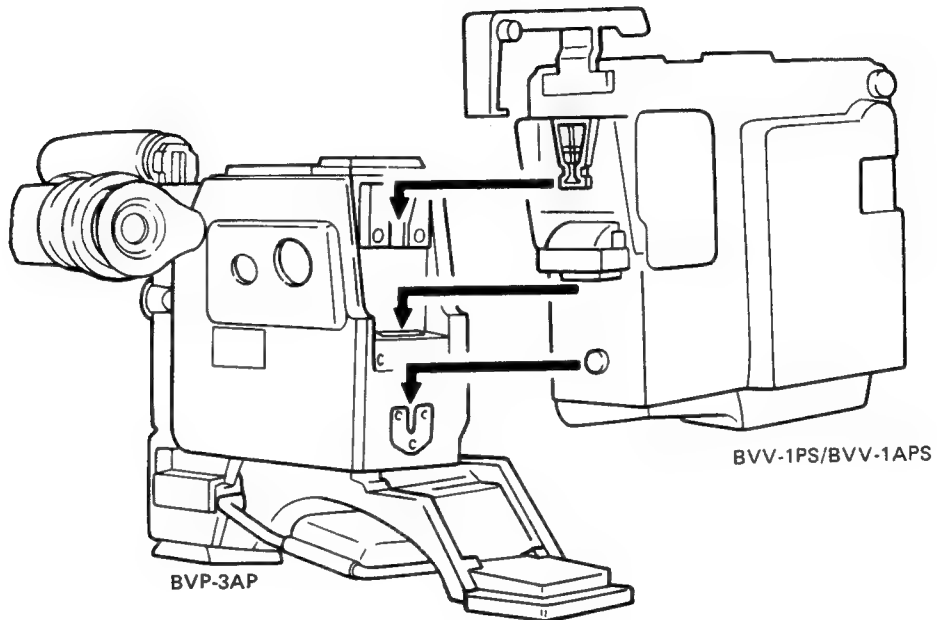
* : Blinks in 4 Hz interval

1-3. SET-UP

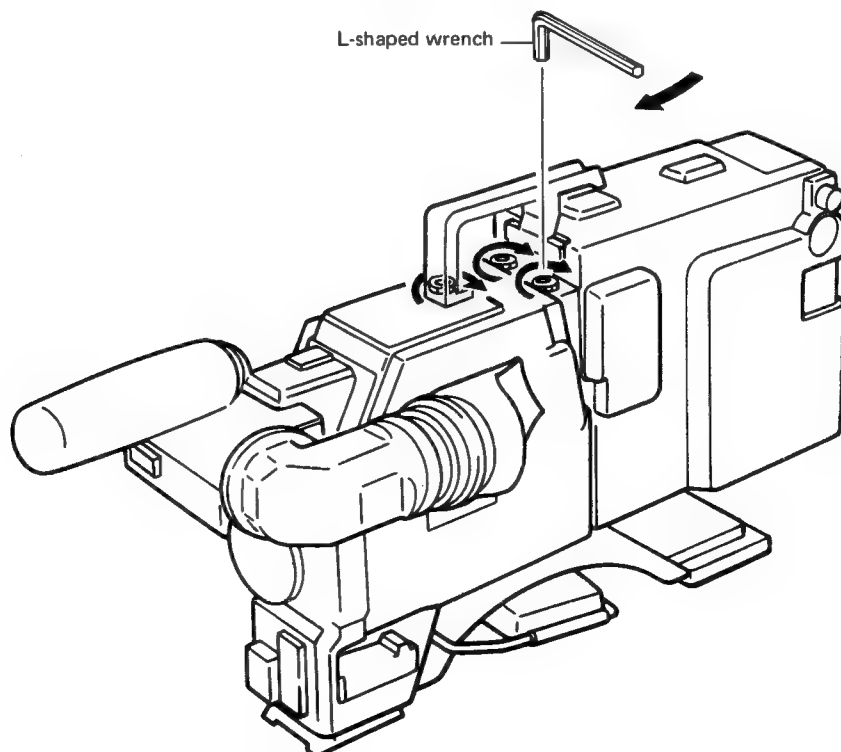
1-3-1. Set up with the BVV-1PS/BVV-1APS VTR

The following shows an example of how to set up the BVP-3AP and the BVV-1PS/BVV-1APS portable videocassette recorder. To set up the BVP-3AP with another unit, refer to the instruction manual furnished with each unit.

1.

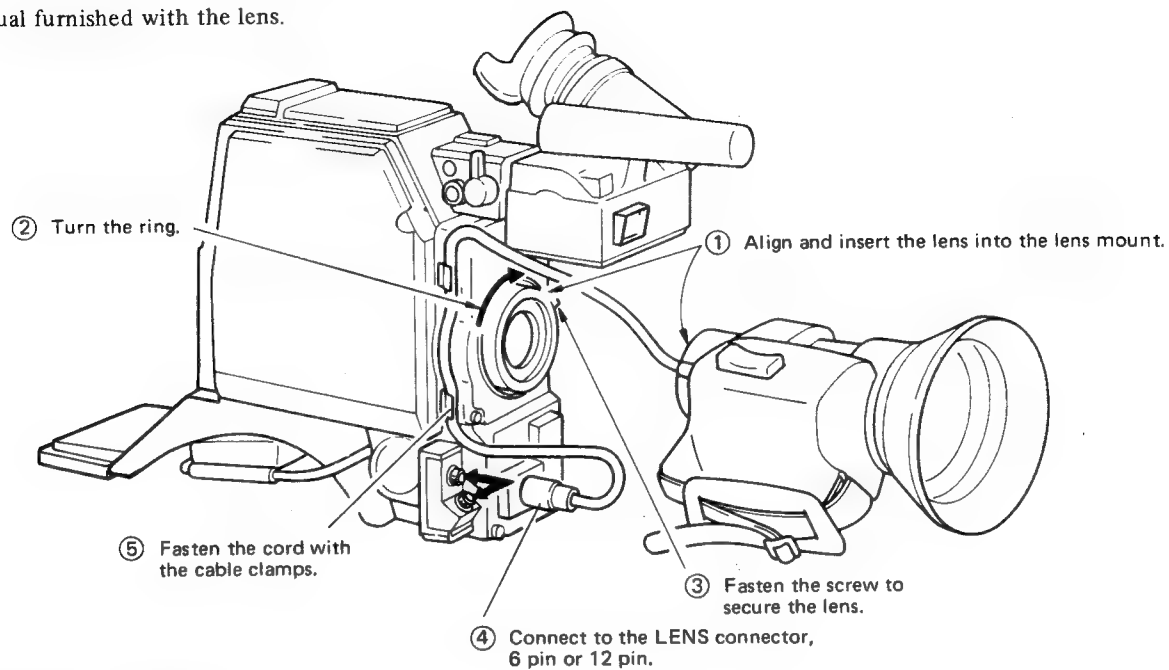


2. Fasten the screws (supplied with the BVV-1PS/BVV-1APS) securely.

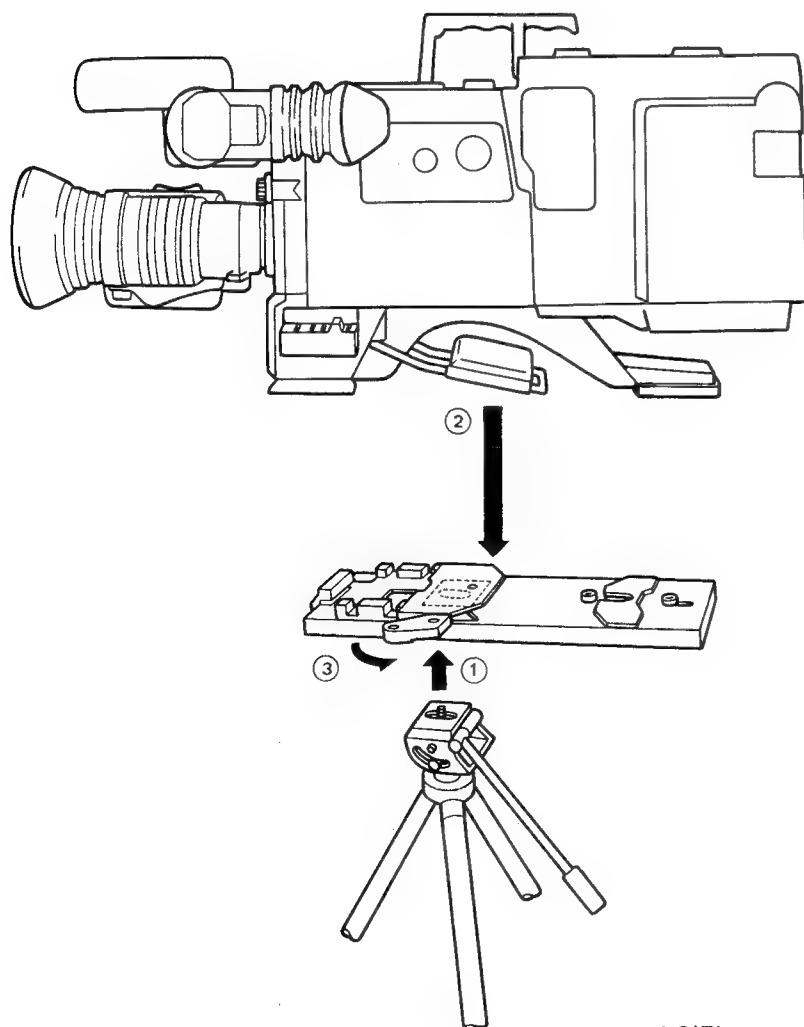


1-3-2. Lens Attachment

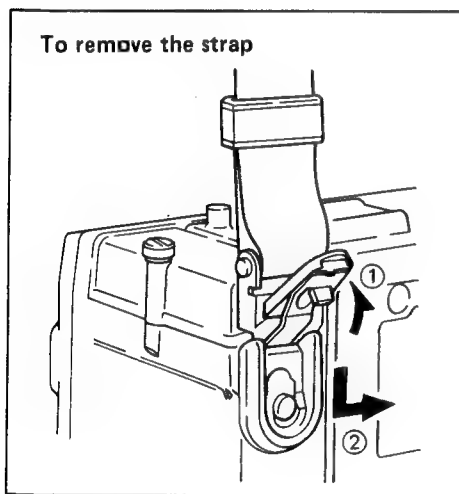
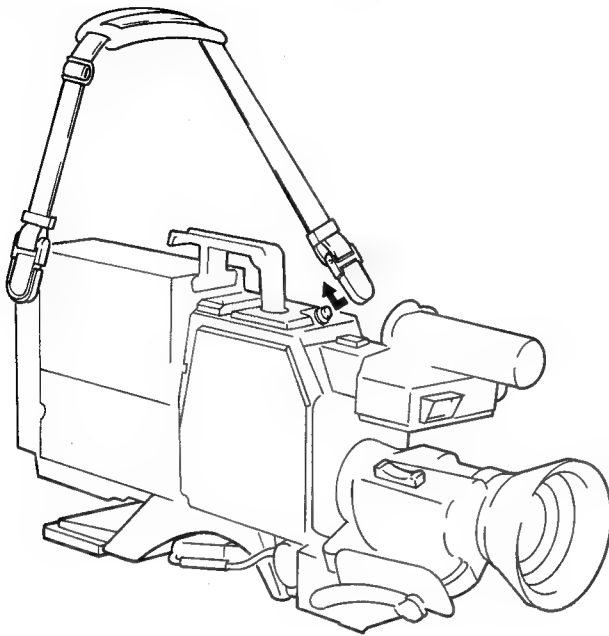
- For the details on the lens, refer to the instruction manual furnished with the lens.



1-3-3. Tripod Attachment



1-3-4. Shoulder Strap Attachment

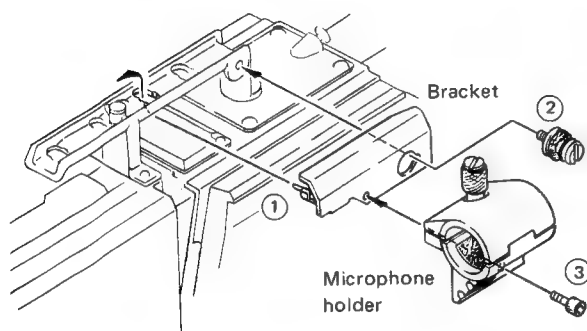


1-3-5. External Microphone Attachment

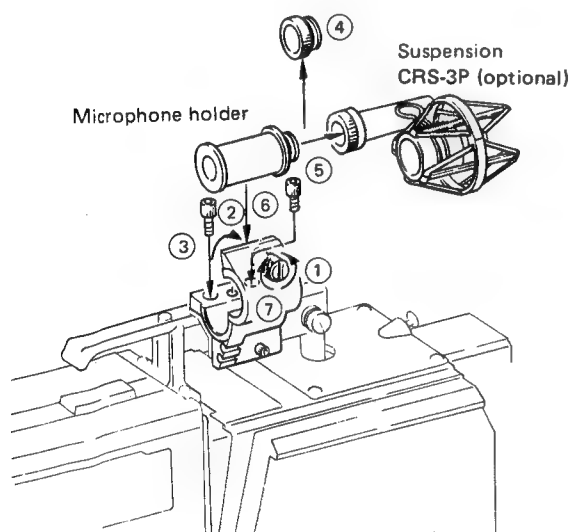
When a suspension is used

When a BVP-3AP is used with the BVV-1PS/BVV-1APS as a BVW-3P/BVW-3AP, attach the microphone to the camera by using a suspension, and the vibration noise of the VTR can be avoided.

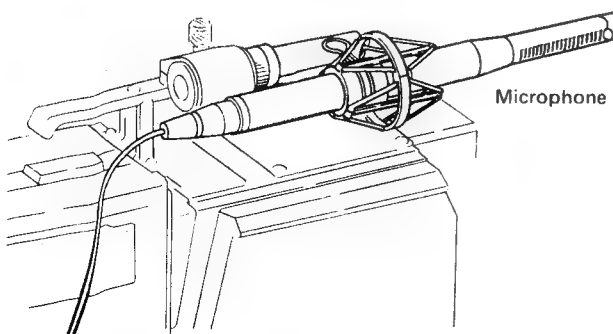
1. Attach a bracket and a microphone holder to the handle.



2. Fix the microphone holder, clamp the suspension with the microphone holder, and fasten the screw.



3. Install the microphone to the suspension.

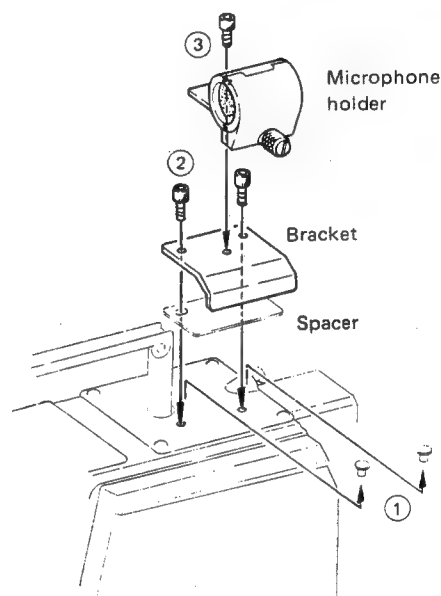


4. Connect the microphone cable to the MIC IN connector on the VTR.

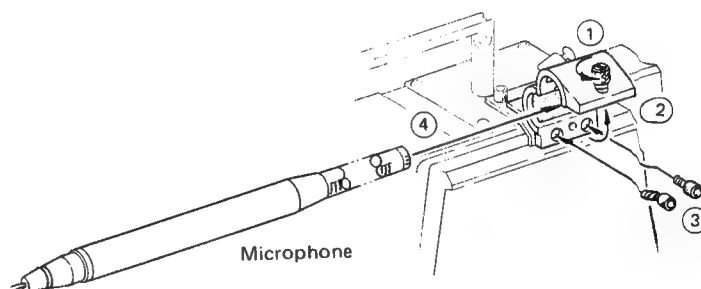
When a suspension is not used

If the suspension is not used, the recording sound is affected by the vibration noise of the VTR. When the camera is used with the BVV-1PS/BVV-1APS, avoid this method. When the CA-3 or CA-30P is used with the BVP-3AP, this method is recommended.

1. Remove the caps on the camera, and attach a bracket and a microphone holder to the camera.



2. Fix the microphone holder, clamp the microphone with the microphone holder, and fasten the screw.
If the diameter of the attached microphone is small, attach the supplied adaptor to the microphone, and clamp it.



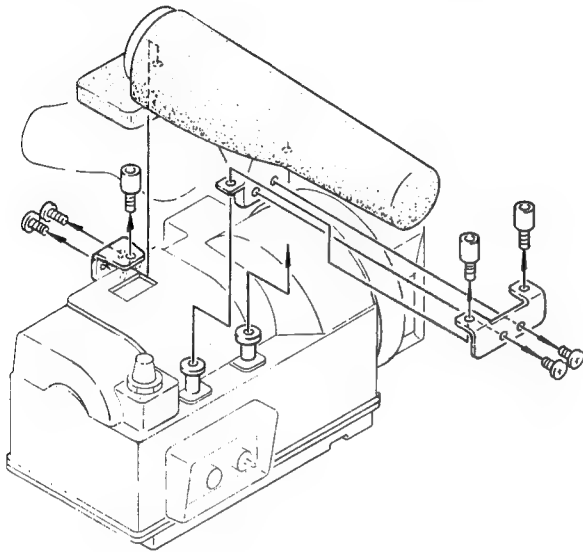
3. Connect the microphone cable to the MIC IN connector on the camera adaptor.

1-4. POWER SOURCES

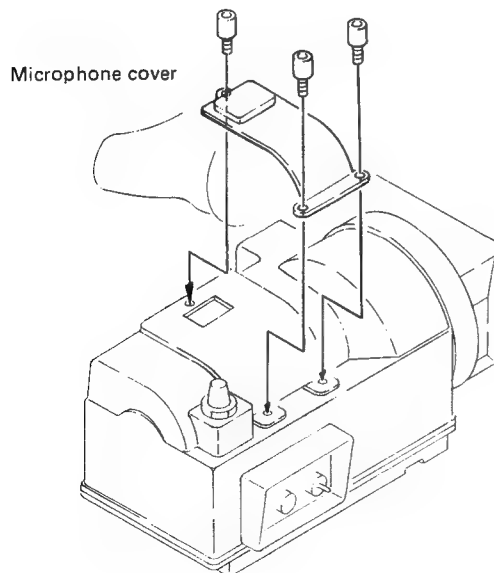
To remove the built-in microphone

When an external microphone is connected, the signal from the built-in microphone is automatically cut off. The built-in microphone can be removed with the following method, and if it is removed, attach the microphone cover supplied.

1. Remove the built-in microphone and the connector.



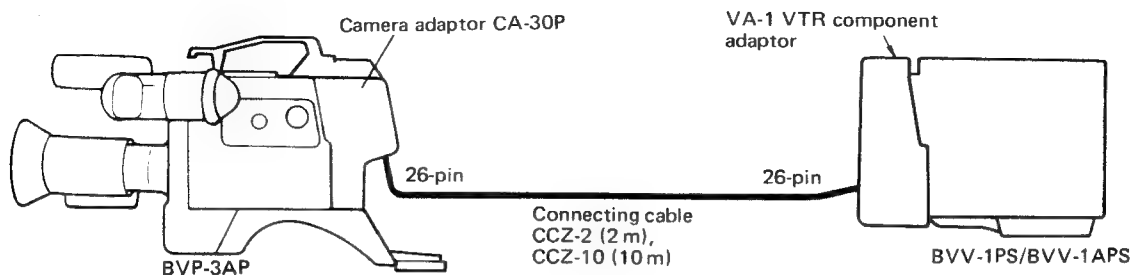
2. Attach the microphone cover.



1-5. CONNECTIONS

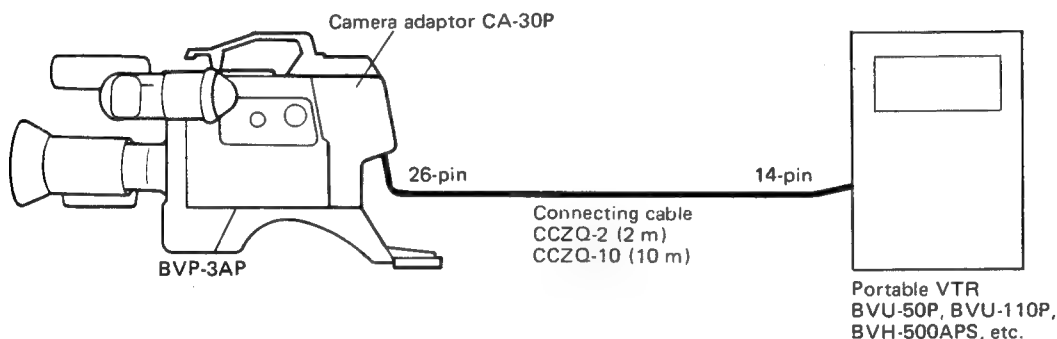
The BVP-3AP can be used as follows besides being directly connected to the BVV-1PS/BVV-1APS with the 50-pin connectors.

Connection with the BVV-1PS/BVV-1APS by using the connecting cable



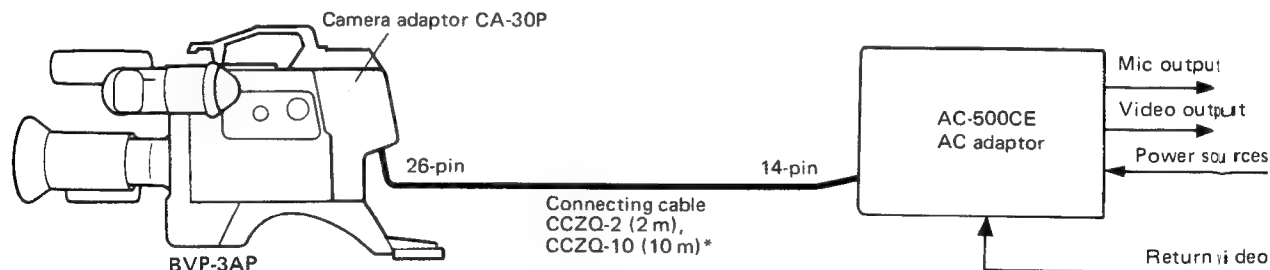
- The VA-1VP VTR composite/component adaptor can be connected in the same way.

Connection with a conventional portable VTR



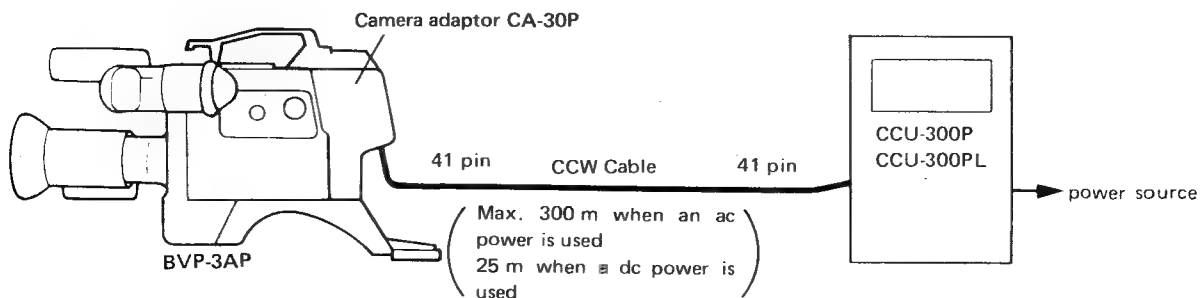
- When the power is supplied from the VTR by using a camera cable of 10 meters long, the picture quality after the BATT indicator in the viewfinder starts blinking is not guaranteed.

Connection with the AC-500CE



- * To supply only the power to the camera, connect the CA-30P and the AC-500CE with a 4-pin cable.
- When the AC-500CE is connected to the VTR with a 4-pin cable, the power will be supplied to the VTR.

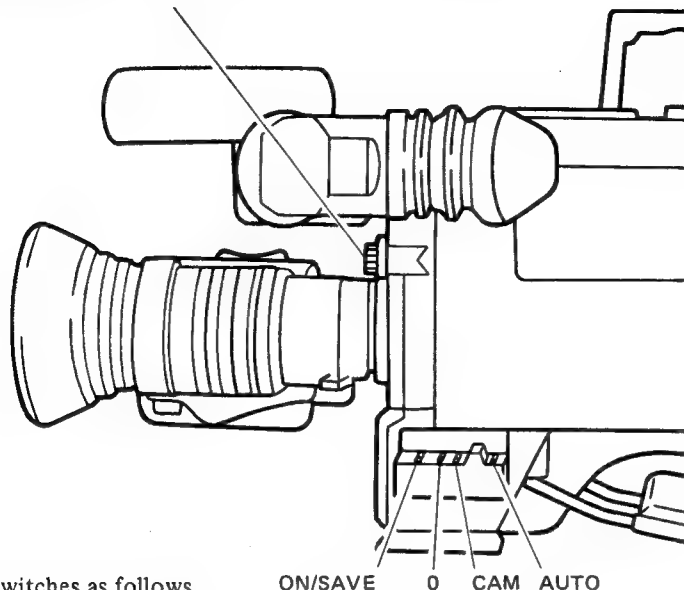
Connection with the CCU-300P/CCU-300PL



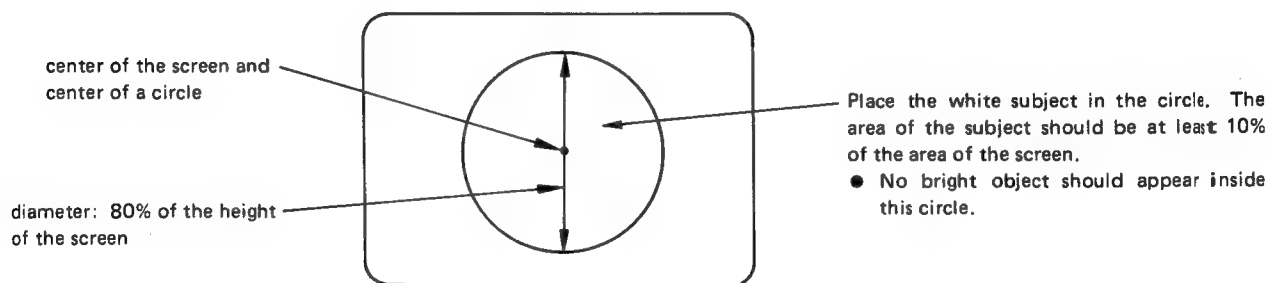
1-6. ADJUSTMENTS

1-6-1. White Balance and Black Balance Adjustments

1. Set the FILTER selector to the position corresponding to the lighting conditions.



2. Set the switches as follows.
3. Place a white pattern under the same lighting conditions as those under which the recording will be made, and zoom up on a pattern.
A white object such as white cloth, white wall, etc. can be used instead of the white pattern.
The minimum white area required for adjustment is as follows.



4. If the automatic iris is not equipped, adjust the iris.
If the automatic iris is equipped, set the iris auto/manual switch to auto.
5. Set the AUTO W/B BAL switch to BLK. The switch automatically returns to the center position when it is released. After about 5 seconds, the black balance is automatically adjusted and the W/B CENT indicator in the viewfinder will light. The indicator will go off after about 5 seconds. The adjusted value will be memorized.
 - The shutter closes when the switch is set to BLK.

6. Set the AUTO W/B BAL switch to WHT. After about 1 second, the white balance will be automatically adjusted and memorized in the same way as above.

The white balance and the black balance adjustments have been completed.

- While the W/B CENT indicator is lighting, the next adjustment can be started. In this case, the indicator goes off when the switch is set to the other position, and lights again when the adjustment finishes.
- When the zoom lens with automatic iris is used, the hunting may occur. In this case, adjust the AUTO IRIS GAIN control on the lens. (For details, refer to the instruction manual furnished with the lens.)
- When the AUTO W/B BAL switch is set to BLK, the setting of the GAIN selector is automatically changed and the noise may appear on the viewfinder screen, but this is not a problem.
- When the lighting conditions of the subject is changed, adjust the white balance only. Readjustment of the black balance is not required.

If the W/B CENT indicator blinks

Check that the proper filter has been selected and adjust the white balance and black balance again.

When the WHITE BAL switch is set to PRESET

The white balance at the 3200°K can be obtained when the FILTER selector is set to "1". Adjust the black balance only by setting the AUTO W/B BAL switch to BLK.

Memorizing the white balance and black balance value

The BVP-3AP has the memory function for the white balance and the black balance. The built-in four memories store the adjusted white balance and black balance values at each filter. The memorized value will be kept for about a week after the power is turned off or until the readjustment is performed.

1-6-2. Black Set Adjustment

The black set is adjusted by the AUTO W/B BAL switch together with the black balance.

To adjust the black set manually, use the volume on the built-in circuit board. For details, refer to Section 2.

1-6-3. Centering Adjustment

The centering of the R, G and B pickup tubes has been adjusted at the factory, so normally no readjustment will be necessary. If the centering adjustment is necessary, adjust as follows.

Adjust the white balance beforehand as indicated in 1-6-1.

1. Set the AUTO CENT switch to MEMORY.
2. Set the iris auto/manual switch on the lens to auto. Be sure that the iris is not fully open. If the iris is fully open, add illumination.

3. Shoot the supplied chart or an object.

When using the supplied chart

Adjust the camera position so that the supplied chart fills the screen.

When not using the supplied chart

Adjust the camera position so that the object is placed within the circle whose center is at the center of the screen and whose diameter is 80% of the height of the screen.

- Use an object which has both horizontal and vertical lines with appropriate contrast.
 - If possible, use the black-and-white picture so that the level of the R, G, B will be nearly the same. An object of one color or with one deep color may cause a centering error.
 - Do not use a moving object and do not move the camera quickly during adjusting.
 - Avoid using an object with thin lines, such as a registration chart.
4. Set the AUTO CENT switch to START. The switch automatically returns to the MEMORY position when it is released. After about 10 seconds, the centering is automatically adjusted and the W/B CENT indicator in the viewfinder will light. The indicator will go off after about 5 seconds.
 - While the centering being adjusted, the image enhancer is set to off and the edges in the circle whose diameter is 70% of the height of the screen are emphasized.
 5. Adjust the white balance again as the centering error may affect the white balance.

If the W/B CENT indicator blinks

An inappropriate test object is being used or

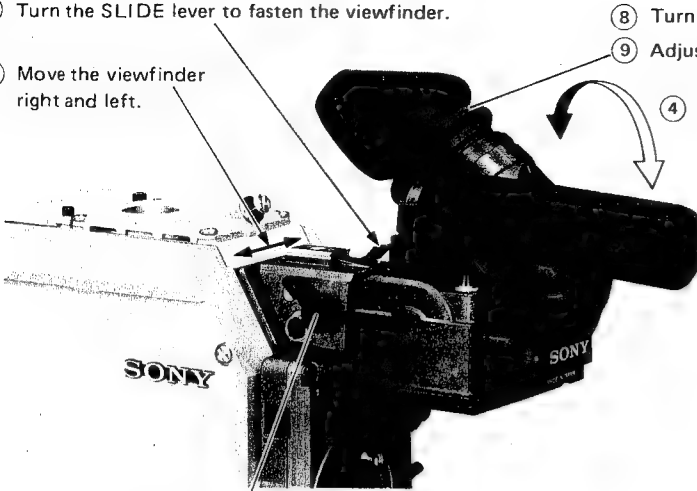
- The object has not enough edges and contrast.
- The iris setting is not proper.
- The object is out of focus.
- The object has moved during adjusting.
- The centering is out of the adjustable range.

Determine the cause and readjust.

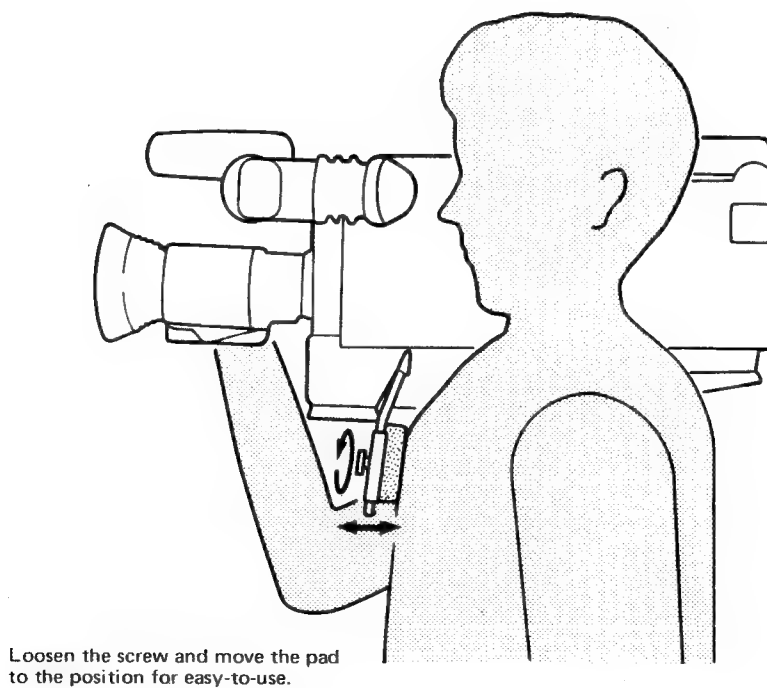
Memorizing the centering value

The adjusted centering value can be memorized in the same way as the white balance and black balance values and be kept for about one week after the power has been turned off. When more than one week has passed after the power has been turned off, the memory will be the factory-set value.

1-6-4. Viewfinder Adjustment

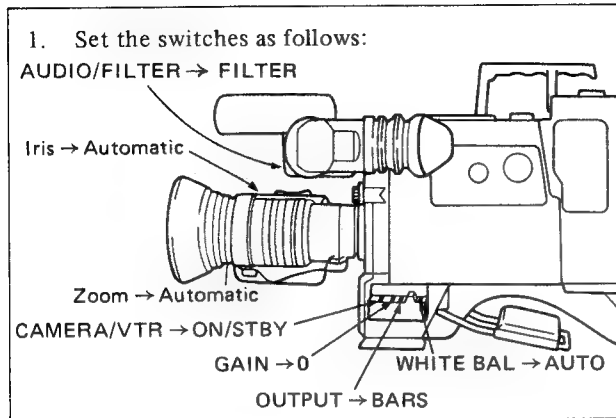
- ⑤ Turn the SLIDE lever to loosen it.
⑦ Turn the SLIDE lever to fasten the viewfinder.
- ⑧ Turn the power on and display the picture on the screen.
⑨ Adjust the eyepiece focus control.
- ⑥ Move the viewfinder right and left.
- ④ Adjust the angle.
- ② Turn the viewfinder until it will be horizontal.
- ① Turn the ROTATION lever to loosen it.
③ Turn the ROTATION lever to fasten the viewfinder.
- 

1-6-5. Brace Adjustment



1-7. OPERATION CHECKS

- The following is an example of operation. For details on operation of the lens, please refer to the instruction manual furnished with the lens.



2. Adjust the viewfinder.

3. Make sure that the color bars appear on the viewfinder screen.

4. Turn the BRIGHT and CONTR controls so that the color bars on the viewfinder screen are clear.

5. Change the FILTER selector setting from 1 → 2 → 3 → 4, and check that the corresponding number of the FILTER indicators in the viewfinder screen lights.

6. Set the OUTPUT selector to CAM.

7. Point the camera at a subject.

8. Focus on the subject by turning the focus ring. Check that the picture appears on the viewfinder screen.

9. Check the motorized zooming.

10. Set the zoom in the manual mode.

11. Check the manual zooming.

12. Set the zoom in the automatic mode.

13. Point the camera at subjects under different brightness levels, and check that the automatic iris adjustment functions.*

14. Set the iris in the manual mode.

15. Turn the iris ring to check the manual iris adjustment.

16. Press and hold down the instant auto button to temporarily switch to automatic iris adjustment. Point the camera at subjects under different brightness levels to check the adjustment.

17. Set the iris in the automatic mode.

18. Set the GAIN selector to 9 and then to 18. Check that the iris closes and that the GAIN UP indicator lights.

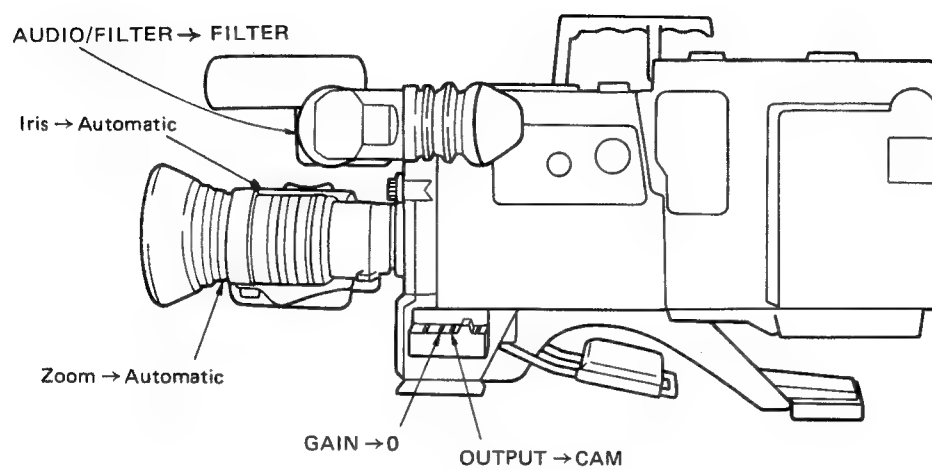
19. Set the GAIN selector to 0.

* When the lens with a 6-pin connector is used, the hunting may occur. In this case, adjust the AUTO IRIS GAIN control on the lens. (For details, refer to the instruction manual furnished with the lens.)

1-8. OPERATION

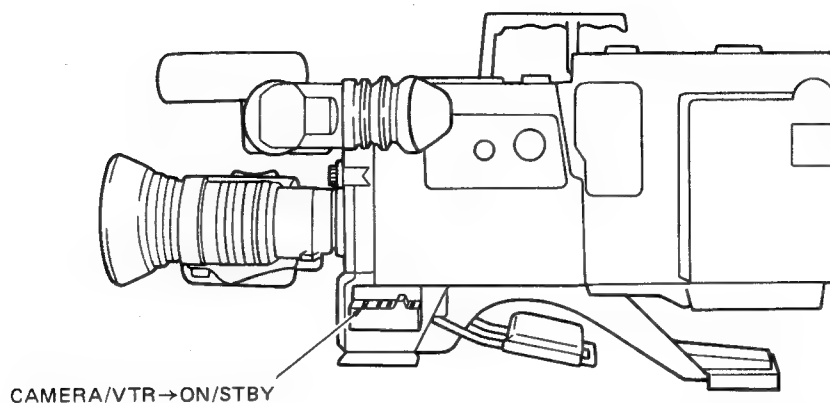
1-8-1. Preparation

Before operation, set the switches as follows.



1-8-2. Camera Recording

1. Turn on the power of the camera and the connected equipment.



2. Insert a cassette tape.
3. Select the appropriate filter.
4. Adjust the white balance and black balance.
When the white balance and black balance value has been memorized
Set the WHITE BAL switch to AUTO.

When the white balance and black balance value is not memorized but you want to start recording quickly
Set the WHITE BAL switch to PRESET and set the AUTO W/B BAL switch to BLK. The white balance and black balance at 3200°K is obtained.

To adjust the white balance and black balance

- ① Set the WHITE BAL switch to AUTO.
 - ② Shoot the white subject.
 - ③ Set the AUTO W/B BAL switch to BLK. When the W/B CENT indicator in the viewfinder lights, the black balance is adjusted.
 - ④ Set the AUTO W/B BAL switch to WHT. When the W/B CENT indicator in the viewfinder lights, the white balance is adjusted.
- For details, refer to "1-6-1. White Balance and Black Balance Adjustments".
5. Point the camera at the subject and adjust focus and zoom.
 6. Press the VTR button to start recording. The REC indicator in the viewfinder lights during recording.
 7. To stop recording, press the VTR button again.

Recording under the insufficient lighting

If a clear picture cannot be obtained because of insufficient lighting, set the GAIN switch to "9" or "18". The video output level can be raised 9 dB by setting the GAIN switch to the 9 position, and 18 dB by setting at the 18 position.

- Normally, set the selector to "0".

Checking the video level

The zebra pattern will appear on the part of the viewfinder screen where the video level of the picture is 70% (IRE UNIT). For manual iris adjustment, you can use this function for the appropriate setting. The zebra pattern can be disappeared by the TALLY/ ZEBRA ON/OFF switch. However if the switch on the built-in circuit board is set to OFF, the zebra pattern cannot be turned on and off with the TALLY/ZEBRA ON/OFF switch. For details, refer to Section 2.

1-9. PRECAUTIONS

Never point the camera directly at the sun.

Pointing the camera directly at the sun or other source of bright light may damage the pickup tube. Avoid continuous shooting of a subject in strong light, which may also damage the pickup tube. If shooting in a strong light is necessary, close the iris as much as possible.

Avoid rough handling or mechanical shock to the camera.

After using the camera

Turn off the power of an equipment connected to the camera.

Operating and storage locations

Avoid operating and storing the camera in the following locations.

- Extreme hot or humid places (The operating temperature is from -20°C to $+40^{\circ}\text{C}$, -4°F to $+104^{\circ}\text{F}$.)
- Places subject to direct sunlight, excessive dust, mechanical vibration or shock.
- Places with subject to a strong magnetic field.

Keep the camera in a horizontal positions and allow adequate air circulation.

Clean the viewfinder lens with a lens cleaner available at camera stores.

Do not use any type of solvent, such as alcohol, benzine or thinner.

1-10. SPECIFICATIONS

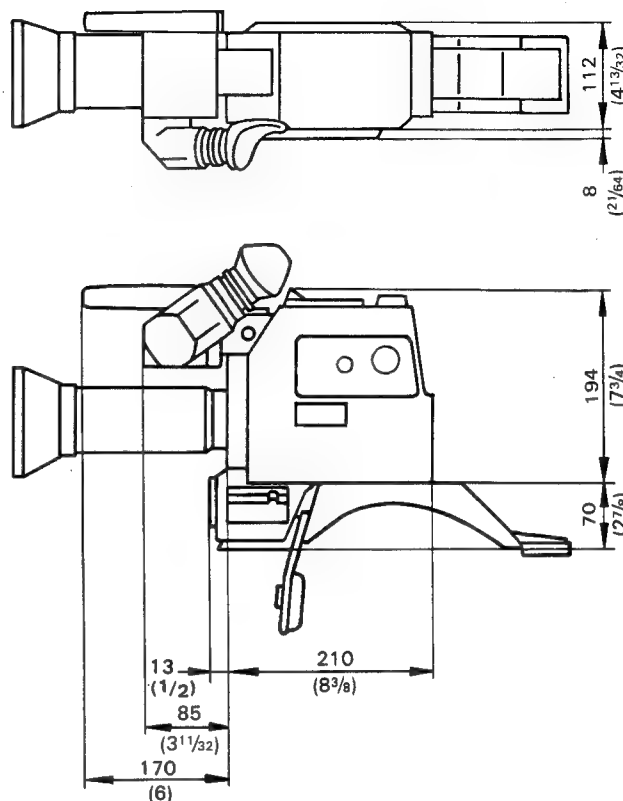
Camera

Pickup tube	2/3-inch Saticon (magnetic focus, static deflection)
System	RGB 3-tube system (with quartz filter)
Spectral system	F1.4 prism system
Built-in filters	1: 3200°K 2: 5600°K + 1/4ND 3: 5600°K 4: 5600°K + 1/16ND
Lens mount	Special bayonet mount
Video output	PAL, 1.0 V(p-p), 75 ohms, unbalanced, sync negative Two outputs (TEST OUT, VTR connector)
Connectors	VTR: 50 pin (video output, microphone output, sync output, power input) TEST OUT: BNC type LENS: 6 pin, 12 pin REMOTE: 6 pin
Sensitivity	2000 lux with f4.5 (typical), 89.9% reflectance
Minimum subject illumination	30 lux (f1.4, +18 dB gain)
Video signal-to-noise ratio	57 dB (typical)
Horizontal resolution	650 TV lines (center)
Registration	0.1% for Zone I (within circle with a diameter corresponding to 80% of picture height) 0.15% for Zone II (within circle with a diameter corresponding to picture width) 0.3% for Zone III (others)
Geometric distortion	Less than 1%
Power requirements	12 Vdc (10.5 - 17 V)
Power consumption	20W
Warm-up time	Approx. 3.5 seconds (from preheat condition)
Operating temperature	-20°C to +40°C (-4°F to +104°F)
Storage temperature	-20°C to +60°C (-4°F to +140°F)
Weight	4.6 kg with viewfinder (10 lb 2 oz)

Design and specifications subject to change without notice.

Dimensions

Unit: mm (inches)



Viewfinder

Picture tube	1.5-inch monochrome BRIGHT control, CONTR control, TALLY/ZEBRA ON/OFF switch, PEAKING switch, AUDIO/FILTER switch, AUDIO CH-1 control
Resolution	500 TV lines
Microphone	Sharp-directional

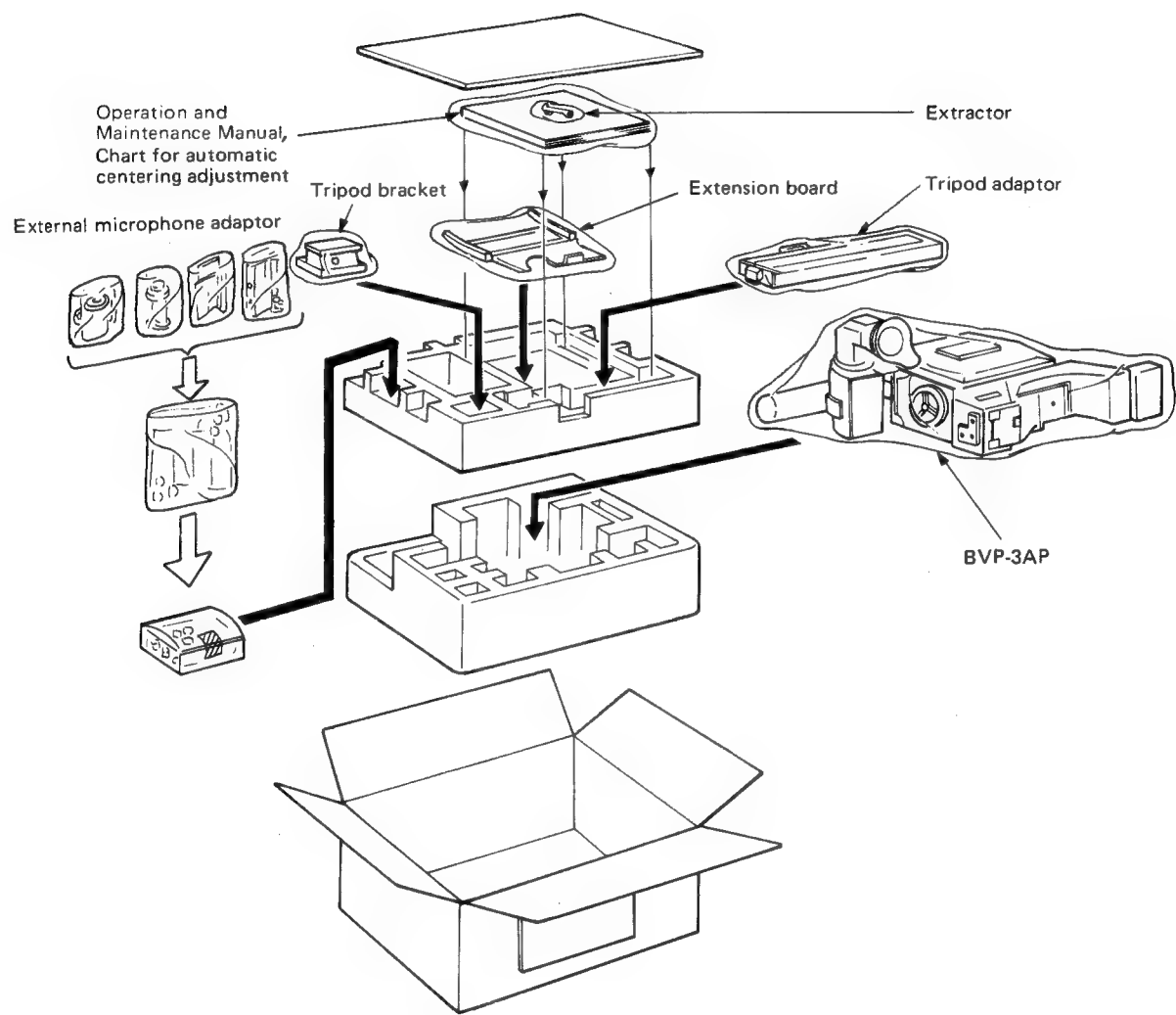
Supplied accessories

Tripod adaptor x1
Tripod bracket x1
Extension board x1
Extractor x1
Chart for automatic centering adjustment x1
External microphone adaptor x1

Recommended equipment

BVV-1PS, BVV-1APS portable videocassette recorder
CA-3, CA-30P camera adaptor
AC-500CE AC adaptor
RM-P3 remote control unit
BVF-50 video monitor

1-11. PACKING OF THE BVP-3AP



1-12. HOW TO OPERATE THE BETACAM SYSTEM BVW-3P/BVW-3AP

1-12-1. Features

Compact and lightweight

The BVP-3AP camera, the BVV-1PS/BVV-1APS VTR, lens, battery and cassette tape together weigh only about 10 kg.

Wireless system

The camera, VTR, viewfinder, battery, microphone, etc. can be connected without using cables.

Low power consumption

The power consumption is so low that the unit can be operated for about 30 minutes with a single NP-1 battery pack when the BVV-1PS/BVV-1APS is used together.

Video and audio confidence

The video and audio confidence system makes it possible to check the recording picture and sound.

High-quality picture

A newly-developed recording system using 1/2-inch cassette tape has greatly improved the picture quality, which now approaches the quality of the 1-inch VTR picture. The three-pickup tube camera using Magnetic focus-Static deflection Plumbicon tubes also assures high quality picture.

Built-in time code generator

A built-in time code generator allows simultaneous recording of the time code during operation. The user bit can also be recorded.

Independent time code track

The time code track is independent of the video track so that time code recording or erasing is possible using an editing machine.

Two audio channels

The sound from a built-in microphone or external microphones or the sound from other audio sources can be recorded on two audio channels separately.

Composite shooting

Videocassette programs can be composed shot-by-shot without any glitches between scenes because vertical-interval timing with a tape back-up feature guarantees a clean cut every time.

Warning system

If there is a problem, warning lamps allows you to monitor the operation and alarm is sounded simultaneously from the speaker or earphone.

Tape remaining time indicator

The tape remaining time indicators are situated in the viewfinder.

Use of the wireless microphone system

A receiver of the Sony wireless microphone system can be attached to the system.

Additional battery pack

One more battery pack can be used together with the battery pack installed in the battery compartment of the BVV-1PS/BVV-1APS.

Dolby NR* (Noise Reduction) C-type system for improving sound quality

The newly developed C-type Dolby NR system is employed for an improved S/N ratio and wider dynamic range. To activate the Dolby NR circuit, refer to section 2 of the BVV-1PS/BVV-1APS instruction manual.

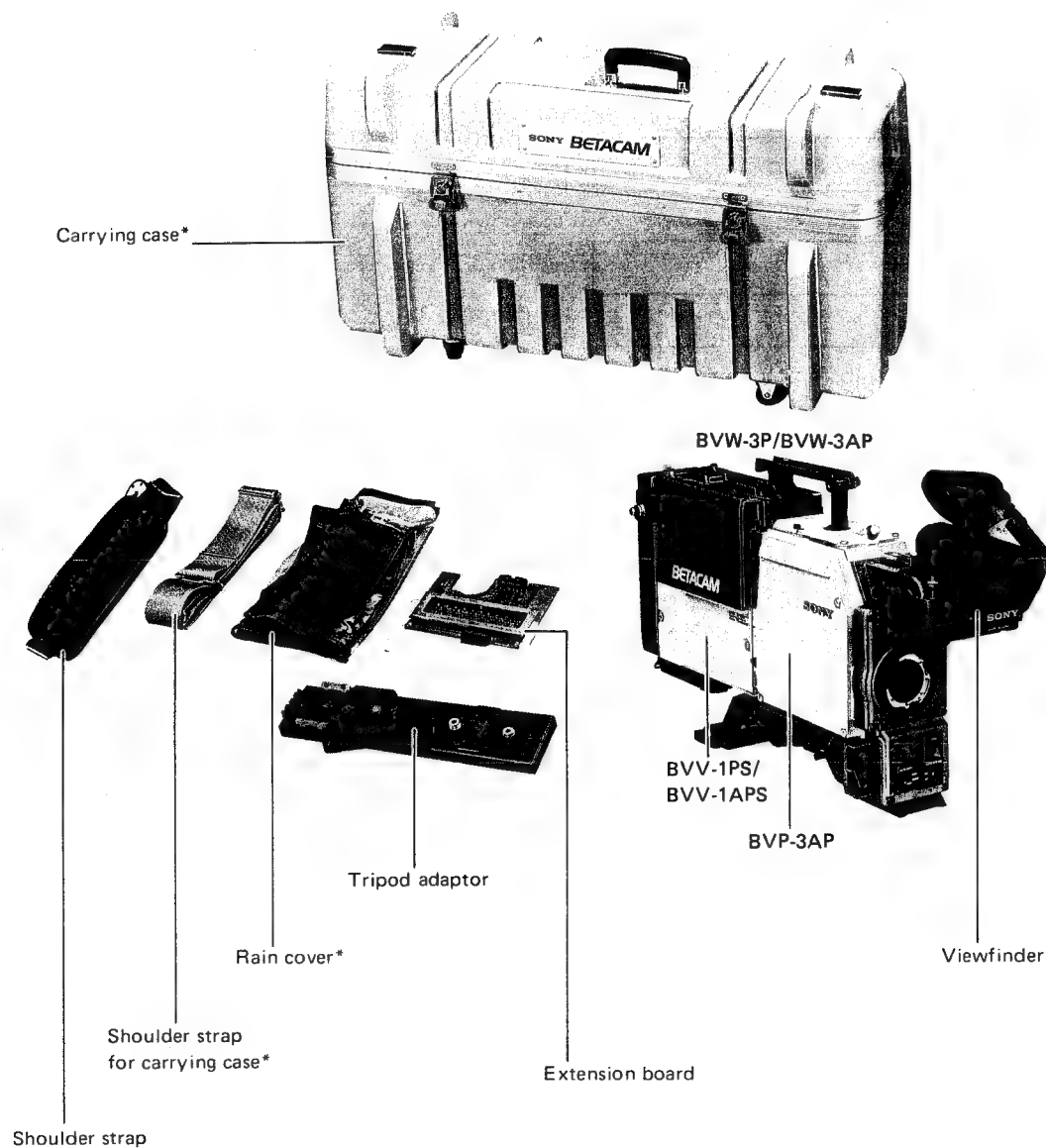
- * "Dolby" and the double-D symbol are trade marks of the Dolby Laboratories Licensing Corporation. Noise reduction system manufactured under license from Dolby Laboratories Licensing Corporation.

Note

When the BVV-1PS with the serial No. 49999 or less is used, the following functions of the BVW-3P/BVW-3AP do not work.

- The audio level indicator in the viewfinder
- The recording level control of audio channel 1

1-12-2. Components of the BVW-3P/BVW-3AP



Battery compartment lid strap
 Chart for the automatic centering adjustment
 External microphone adaptors
 Extractor
 50-pin caps
 Time code cable
 6-pin connector

* A carrying case, a shoulder strap for carrying case and a rain cover are supplied to the Betacam system BVW-3P/BVW-3AP. When a BVV-1PS/BVV-1APS VTR and a BVP-3AP camera are obtained separately, they will not be supplied. To obtain them, please consult your Sony personnel.

1-12-3. Check Routines

Before operation, we recommend to perform the following check and confirm that the Betacam system works correctly. In this case, use a color monitor to check the picture.

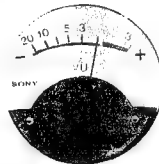
1. Preparation

1. Insert a fully-charged battery pack.

2. POWER switch → ON

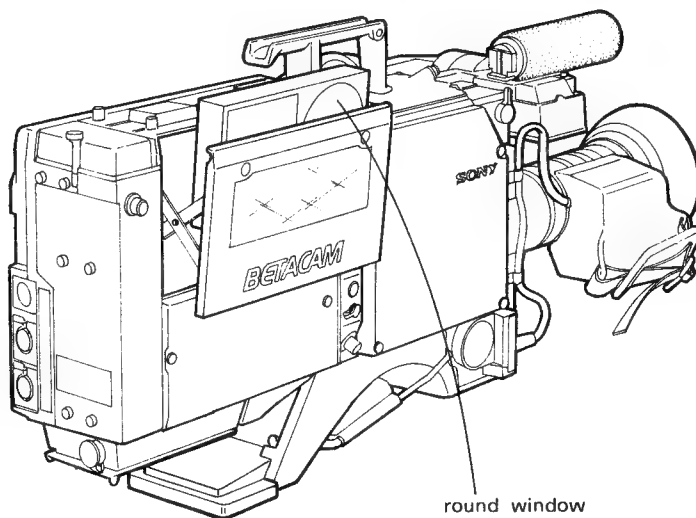
3. Check that the HUMID lamp does not light.

4. Check the battery.
Set the METER SELECT switch to BATT and check that the meter pointer deflects into the green zone.



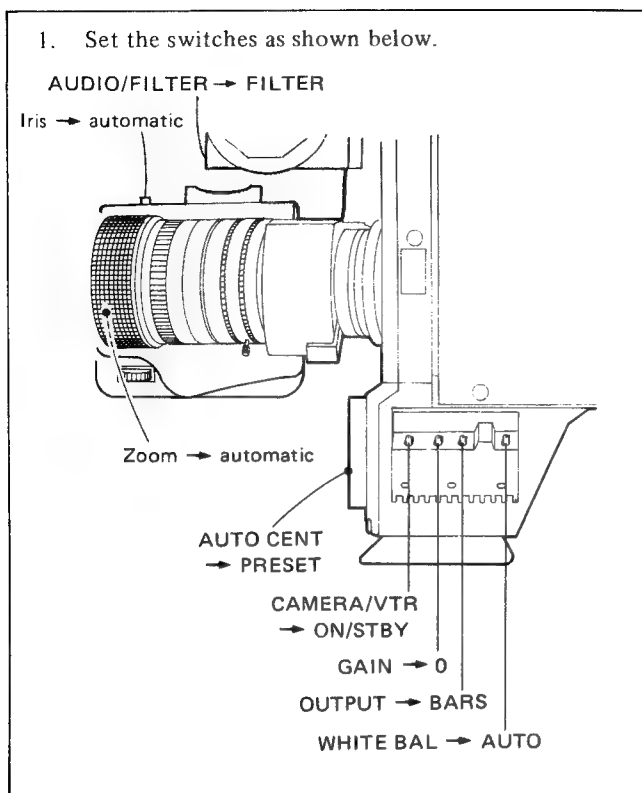
5. Set the time code or the user bit, if necessary.

6. Insert a cassette tape.



- Check that the safety tab on the bottom of the cassette is in place.

2. Check the camera



2. Adjust the position of the viewfinder.

3. Check that the color bars appear on the viewfinder.

4. Turn the BRIGHT control and CONTR control on the viewfinder so that the color bars on the viewfinder screen can be seen clearly.

5. Turn the FILTER selector 1 → 2 → 3 → 4 and check that the filter indicator in the viewfinder lights in turn according to the position of the FILTER selector.

6. Set the OUTPUT selector to CAM.

7. Point the camera to the appropriate subject.

8. Turn the focus ring so that the subject is in the focus. Check that the subject appears on the viewfinder screen.

9. Check the motorized zoom function. With the motorized zoom knob, the picture changes from wide-angle to telephoto and vice versa.

10. Set the zoom in the manual mode.

11. Check the manual zoom function. Turn the manual zoom lever and check that the picture changes from wide-angle to telephoto and vice versa.

12. Set the zoom in the automatic mode.

13. Point the subject with different brightness and check that the auto iris mechanism functions. *

14. Set the iris in the manual mode.

15. Turn the iris ring and check that iris is adjusted.

16. Press and hold down the instant auto button to temporarily switch to automatic iris adjustment. Point the camera at subjects under different brightness levels to check the adjustment.

17. Set the iris in the automatic mode.

18. Set the GAIN selector to 9 and to 18. Check that the iris closes and that the GAIN UP indicator in the viewfinder lights.

19. Set the GAIN selector to 0.

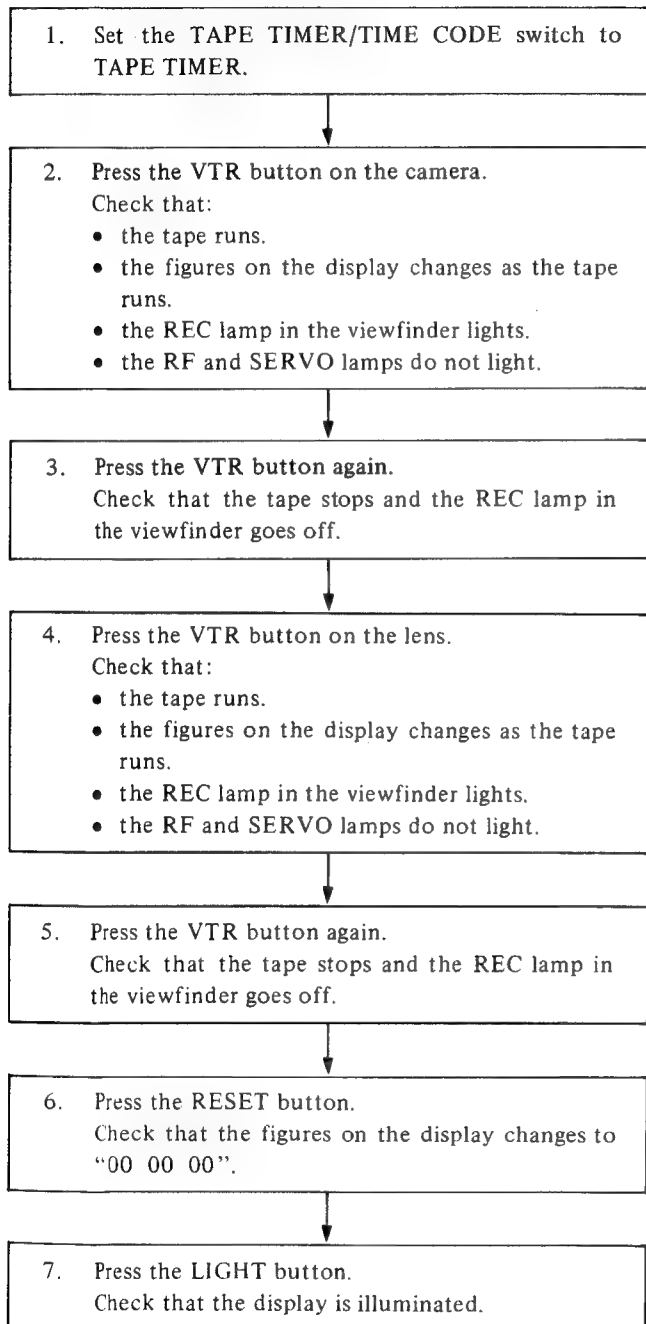
20. Set the AUDIO/FILTER switch to AUDIO. Check that the FILTER/AUDIO indicator shows the audio level.

* When a lens with a 6-pin connector is used, hunting may occur. In this case, adjust the AUTO IRIS GAIN control on the lens. (For details, refer to the instruction manual furnished with the lens.)

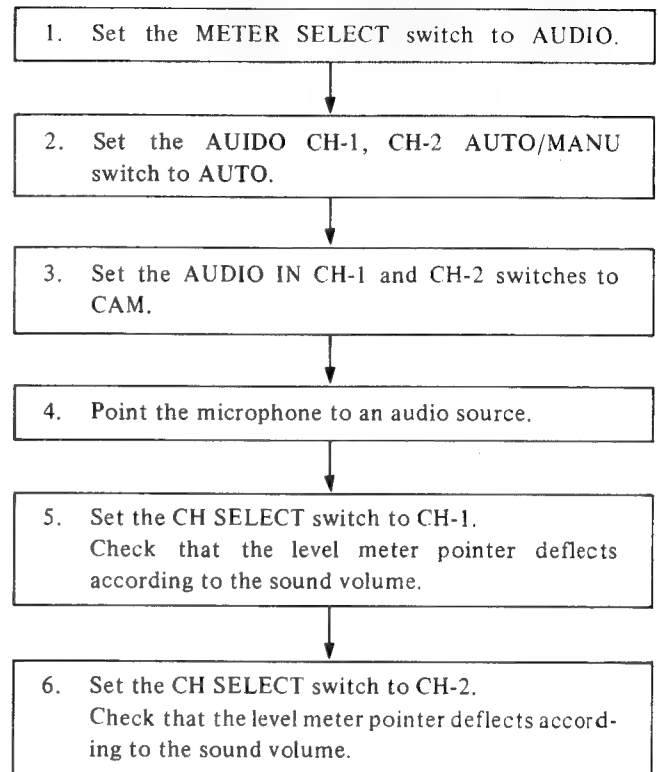
3. Check the VTR

Perform the 3-1. through the 3-5. continuously.

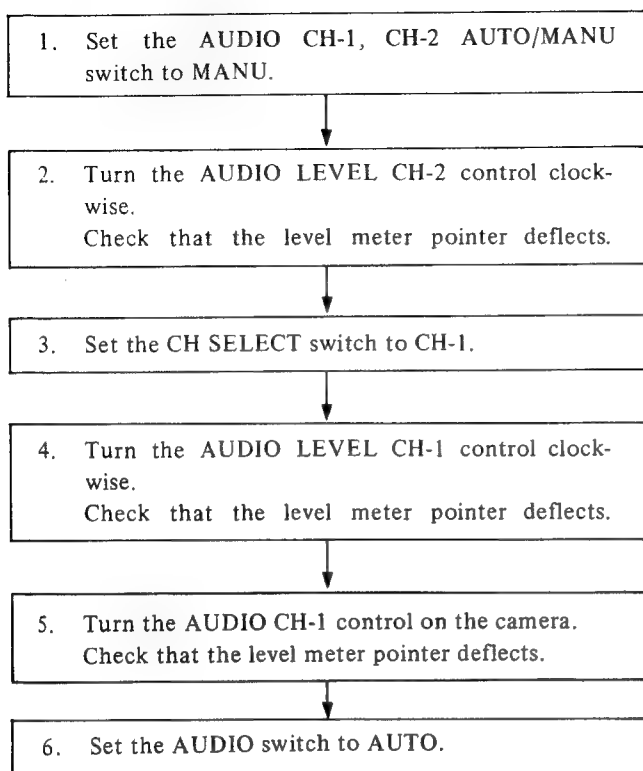
3-1. Check the tape transport



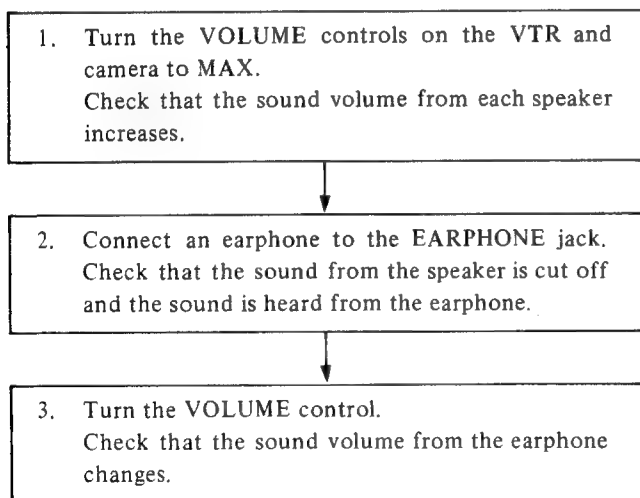
3-2. Check the automatic audio recording level adjustment



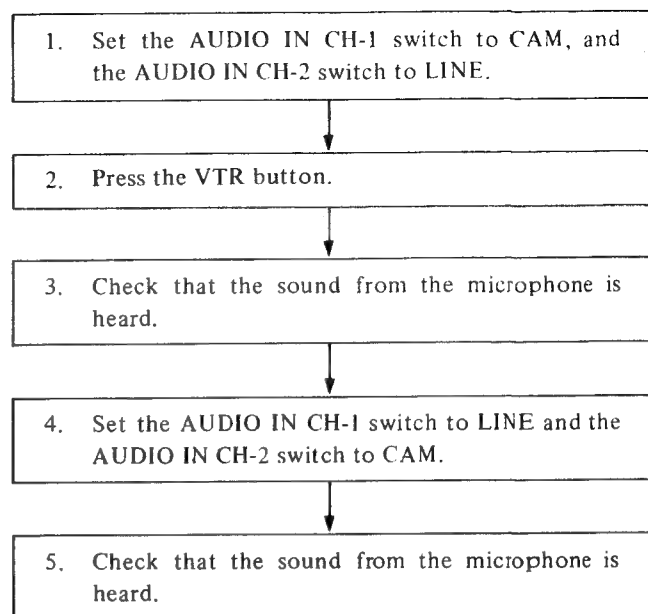
3-3. Check the manual audio recording level adjustment



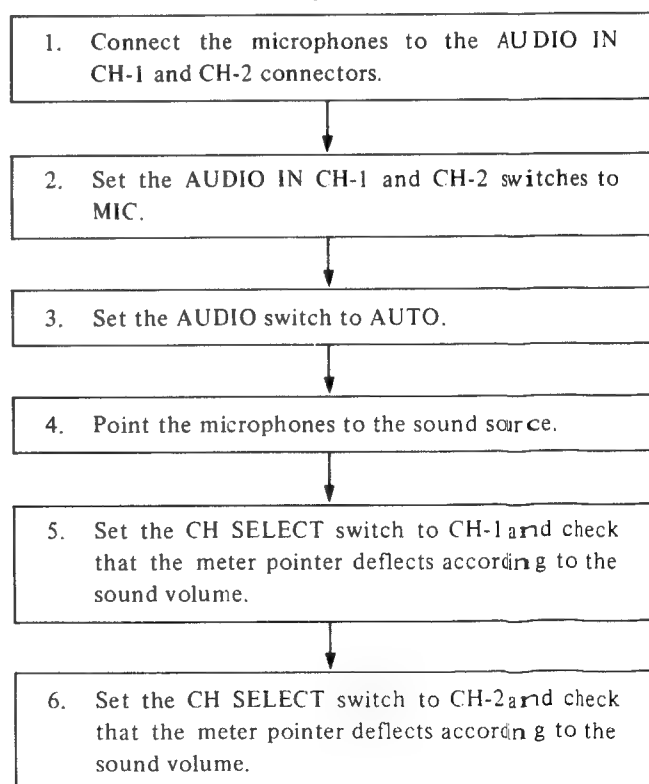
3-4. Check the earphone and speaker



3-5. Check the audio confidence function



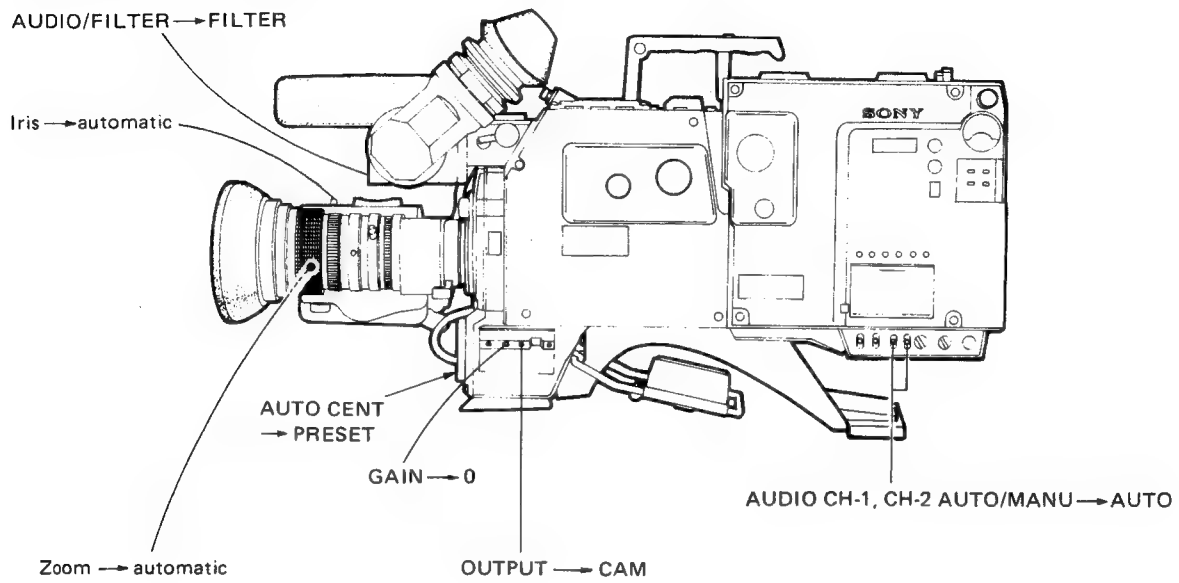
3-6. Check the external microphones



1-12-4. Operation

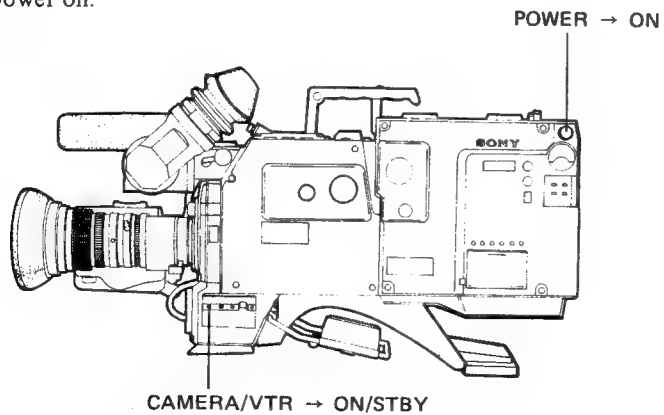
1. Preparation

Before starting operation, check that the switches are set correctly as shown below.



2. Recording

1. Turn the power on.



2. Insert a cassette tape.

3. Select the appropriate filter according to the lighting conditions.

4. Adjust the white balance and the black balance.

When the white balance and the black balance value has been memorized
Set the WHITE BAL switch to AUTO.

When the white balance value is not memorized but you want to start recording quickly

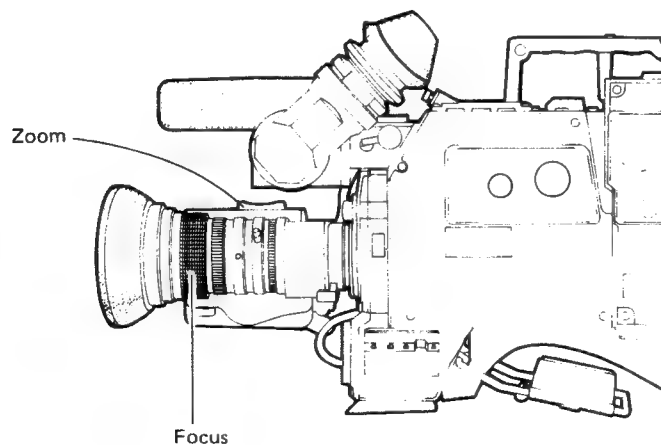
Set the WHITE BAL switch to PRESET and set the AUTO W/B BAL switch to BLK. The white balance and the black balance at 3200°K is obtained.

To adjust the white balance and the black balance

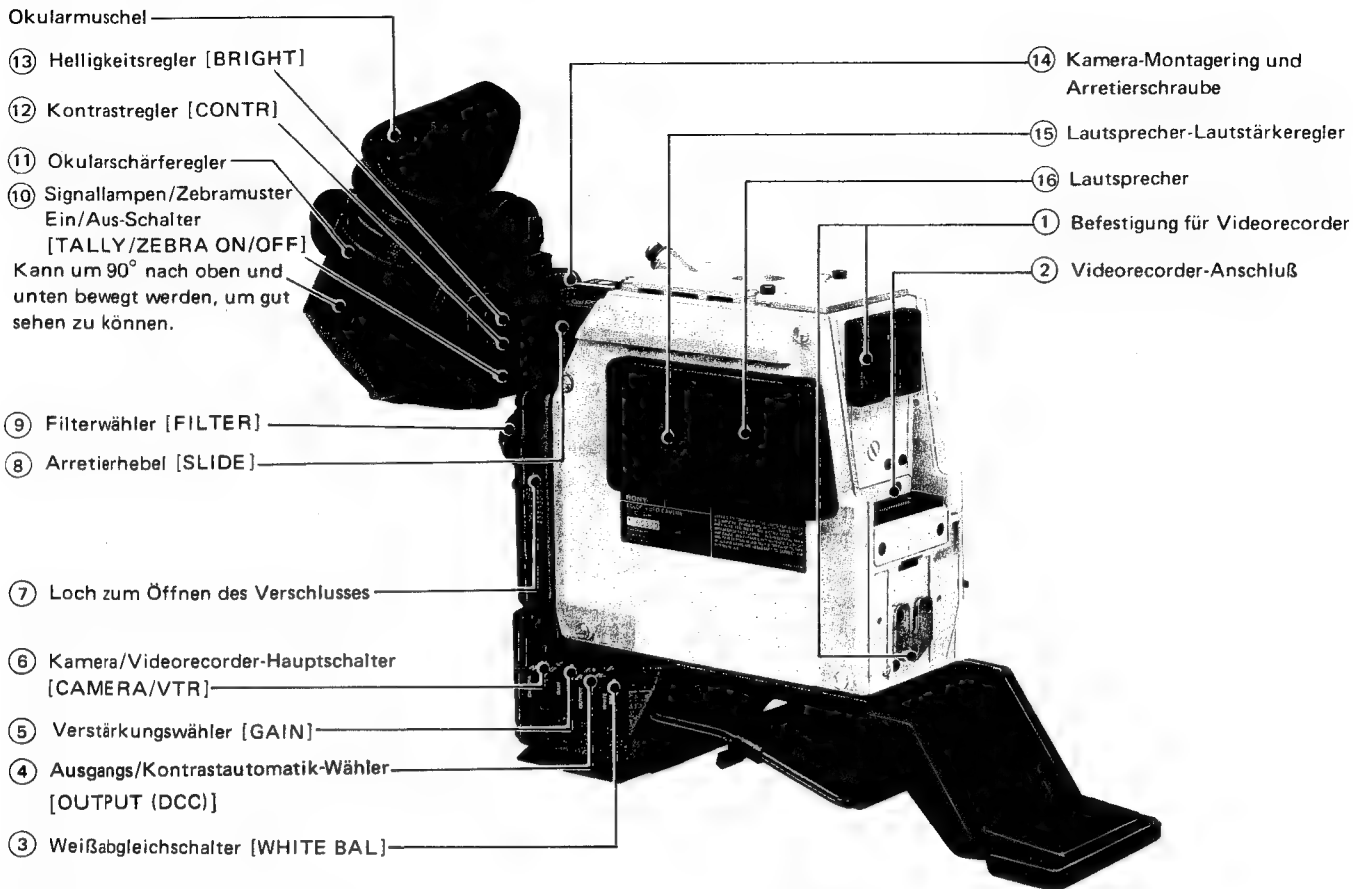
1. Set the WHITE BAL switch to AUTO.
2. Zoom up the white subject.
3. Set the AUTO W/B BAL switch to BLK. When the W/B CENT indicator lights, the black balance is adjusted.
4. Set the AUTO W/B BAL switch to WHT and check that the W/B CENT indicator lights.

- For details on the white balance and black balance adjustments, see "1-6. Adjustments".

5. Point the camera to the subject and adjust the focus and zoom.



1-2. LAGE UND FUNKTION DER TEILE



1 Befestigung für Videorecorder

Hier wird der tragbare Videorecorder BVV-1PS/ BVV-1APS oder der Kameraadapter CA-3 oder CA-30 usw. angesetzt.

2 Videorecorderanschluß (50-pol)

Der 50-polige Anschluß des Videorecorders BVV-1PS/BVV-1APS oder des Kameraadapters CA-3 oder CA-30P usw. wird hier angeschlossen.

3 Weißabgleichschalter [WHITE BAL]

PRESET: In der Stellung „1“ des FILTER-Wählers 9 erhält man einen werkseitig voreingestellten Weißabgleich auf 3200°K (Farbtemperatur einer Jodlampe). Verwenden Sie diese Position, wenn Sie keine Zeit zum Einstellen des Weißabgleichs haben.

AUTO: Im allgemeinen wird diese Position gewählt. In der Stellung WHT des AUTO W/B BAL-Schalters 25 wird der Weißabgleich automatisch eingestellt und gespeichert. In der Stellung AUTO des Weißabgleichschalters erhalten Sie dann immer diesen gespeicherten Wert.

4 Ausgangs/Kontrastautomatik-Wähler [OUTPUT (DCC)]

Zur Wahl des am VTR-Anschluß 2 oder TEST OUT-Anschluß 22 anliegenden und zum Sucher geführten Signals.

CAM: Für das von der Kamera aufgenommene Signal.

In der Stellung DCC ON arbeitet der eingebaute DCC-Schaltkreis (Dynamic Contrast Control). Ist keine Kontrastautomatik erwünscht, stellen Sie den Wähler auf DCC OFF.

BARS (DCC OFF): Für das Farbbalkensignal. Wählen Sie diese Position, um die Farbbalken zur Einstellung des Video-Monitors zu verwenden oder um die Farbbalken aufzunehmen.

5 Verstärkungswähler [GAIN]

Dieser Wähler wird normalerweise auf „0“ eingestellt. Wird er auf „9“ oder „18“ gestellt, erhöht sich der Video-Ausgangspegel jeweils um 9 bzw. 18 dB.

6 Kamera/Videorecorder-Hauptschalter [CAMERA/VTR]

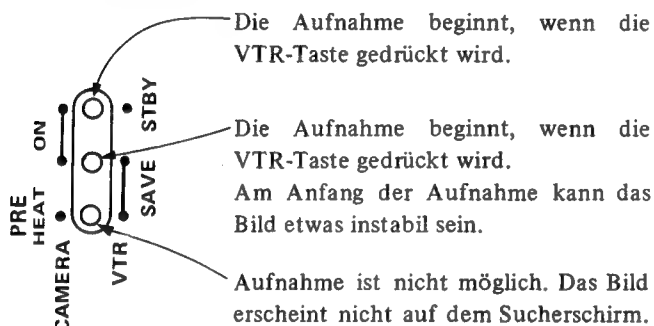
Mit diesem Schalter wird der Strom zur Kamera und zum Videorecorder ein- und ausgeschaltet.

CAMERA-PREHEAT: Aufnahmeröhre und Heizung der Sucher-Bildröhre werden mit Strom versorgt; das Bild erscheint jedoch nicht auf dem Sucherschirm. In dieser Schalterstellung wird weniger Strom verbraucht.

CAMERA-ON: Alle Teile der Kamera werden mit Strom versorgt, und das Bild erscheint auf dem Sucherschirm.

VTR-SAVE: Die Kopftrommel kommt zum Stillstand, und das Band wird freigegeben. Weil in dieser Schalterstellung weniger Strom verbraucht wird, ist eine längere Aufnahmezeit möglich.

VTR-STBY: Die Kopftrommel beginnt sich zu drehen, und das Band wird um die Kopftrommel geschlungen.



⑦ Loch zum Öffnen des Verschlusses

Wenn sich der Verschluss bei normalem Betrieb nicht öffnet, so kann er durch Durchstoßen der Öffnung zwangsgeöffnet werden. Überprüfen Sie jedoch zuvor die Stromversorgung und die Anschlüsse. Öffnet sich der Verschluss danach immer noch nicht, nehmen Sie die Gummikappe ab und stoßen Sie mit einem dünnen Stab in das Loch. Der Verschluss öffnet sich dann. Versäumen Sie nicht, sich an Ihren Sony Händler zu wenden, wenn der Verschluss einmal auf diese Art geöffnet werden mußte.

⑧ Arretierhebel [SLIDE]

Zum Arretieren des Suchers stellen Sie den Hebel nach rechts und zum Lösen der Arretierung stellen Sie ihn nach links. Bei gelöster Arretierung kann der Sucher horizontal in die optimale Betriebsposition bewegt werden.

⑨ Filterwähler [FILTER]

Wählen Sie je nach Lichtverhältnissen den geeigneten Filter.

Filternummer	Farbtemperatur	Lichtverhältnisse
1	3200°K	Sonnenaufgang, Sonnenuntergang, im Studio
2	5600°K +1/4ND*	Im Freien bei gutem Wetter
3	5600°K	Bei Regen oder bewölktem Himmel
4	5600°K +1/16ND*	Schneelandschaft bei klarem Wetter, im Gebirge oder am Meer

*ND: Graufilter

⑩ Signallampen/Zebromuster-Ein/Aus-Schalter [TALLY/ZEBRA ON/OFF]

ZEBRA:

Das Zebromuster und die Signallampe werden eingeschaltet.

OFF: Das Zebromuster und die Signallampe werden ausgeschaltet.

ZEBRA: Das Zebromuster wird ein- und die Signallampe ausgeschaltet.

⑪ Okularscharferegler

Zum Scharfstellen des Sucherbildes.

- Dieser Regler hat keinen Einfluß auf das Ausgangssignal von der Kamera.

⑫ Kontrastregler [CONTR]

Mit diesem Regler wird der Bildkontrast des Sucherschirms eingestellt.

- Dieser Regler hat keinen Einfluß auf das Ausgangssignal der Kamera.

⑬ Helligkeitsregler [BRIGHT]

Mit diesem Regler wird die Helligkeit des Sucherschirms eingestellt. Stellen Sie den Regler für helleres Bild nach rechts.

- Dieser Regler hat keinen Einfluß auf das Ausgangssignal der Kamera.

⑭ Kamera-Montagering und Arretierschraube

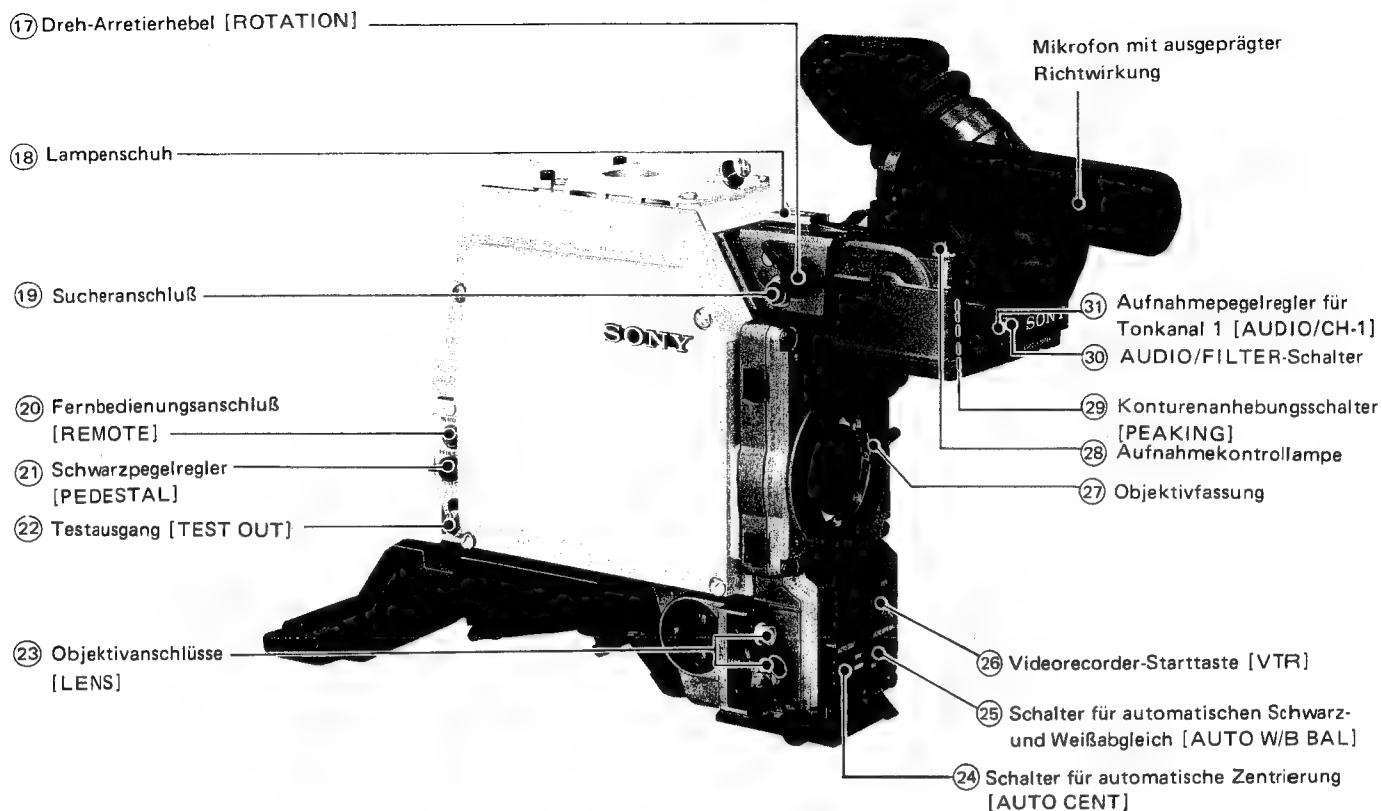
Nehmen Sie den Sucher normalerweise nicht von der Kamera ab. Ist ein Abnehmen jedoch nicht vermeidbar, so öffnen Sie die Arretierschraube und drehen Sie den Befestigungsring vom Objektiv aus gesehen nach rechts. Der Sucher kann dann abgezogen werden. Um den Sucher wieder anzubringen, drehen Sie den Befestigungsring nach links, und drehen Sie zur Sicherung die Arretierschraube fest.

⑮ Lautsprecher-Lautstärkeregler

Zur Einstellung der Lautsprecher-Lautstärke. Durch Drehen nach rechts erhöht sich die Lautstärke. Wird der Regler ganz nach links gedreht, ist kein Ton zu hören.

⑯ Lautsprecher

Beim Aufnehmen kann gleichzeitig der Wiedergabeton (Mischsignal von Kanal 1 und 2) überwacht werden. In den anderen Betriebsarten ist der am Videorecorder gewählte E-zu-E-Ton zu hören. Außerdem ist auch ein Warnton entsprechend der Warnanzeigen zu hören.



17 Dreh-Arretierhebel [ROTATION]

Drehen Sie den Hebel zum Befestigen des Suchers nach unten. Durch Drehen nach links kann die Arretierung geöffnet und der Sucher gedreht werden.

18 Lampenschuh

Zum Anbringen einer Videolampe usw.

19 Sucheranschluß (12-pol)

Zum Anschluß des Suchers BVF-50.

- Wird ein Sucher an diesen Anschluß angeschlossen, so nehmen Sie auf jeden Fall den mitgelieferten 1,5"-Sucher von der Kamera ab. Schließen Sie nicht gleichzeitig zwei Sucher an.

20 Fernbedienungsanschluß [REMOTE] (6-pol)

Wird hier eine geeignete Einheit angeschlossen, so kann eine fernbediente Feineinstellung der Blende, des Schwarzpegels und der Verstärkung vorgenommen werden.

21 Schwarzpegelregler [PEDESTAL]

Mit diesem Regler wird der Schwarzpegel eingestellt.

22 Testausgang [TEST OUT] (BNC)

Hier liegen die folgenden, am ENC/REG-Schalter der eingebauten Leiterplatte gewählten Signale an.

REG: Die an den R/OFF/B- und G/OFF/-G-Schaltern gewählten R, G, B, R-G oder B-G Testsignale liegen an.

ENC: Das kodierte Videosignal liegt an. Verwenden Sie normalerweise diese Stellung.

23 Objektivanschlüsse [LENS] (6-pol, 12-pol)

Schließen Sie das Kabel des Objektivs an den 6-poligen bzw. 12-poligen Anschluß an.

Ihr Sony Händler gibt Ihnen gerne Auskunft darüber, welche Objektive verwendet werden können.

**②4 Schalter für automatische Zentrierung
[AUTO CENT]**

PRESET: Bei Nichtverwendung des gespeicherten Zentrierwertes.

MEMORY: Nach der automatischen Zentrierungseinstellung wird der abgespeicherte Zentrierwert verwendet.

START: Zur automatischen Zentrierungseinstellung ist die Kamera auf ein geeignetes Objekt auszurichten und der Schalter auf START zu stellen. Beim Loslassen kehrt der Schalter automatisch in die Mittelstellung zurück.

②5 Schalter für automatischen Schwarz- und Weißabgleich [AUTO W/B BAL]

WHT: Für automatischen Weißabgleich stellen Sie den WHITE BAL-Schalter ③ auf AUTO und diesen Schalter auf WHT. Der eingestellte Wert wird automatisch abgespeichert.

BLK: Für automatischen Schwarzabgleich und automatische Schwarzeinstellung stellen Sie diesen Schalter auf BLK. Der eingestellte Wert wird automatisch im Memory abgespeichert.

- Beim Loslassen kehrt der Schalter automatisch von der Stellung WHT oder BLK in die Mittelstellung zurück.

②6 Videorecorder-Starttaste [VTR]

Drücken Sie diese Taste, um mit der Aufnahme zu beginnen. Zum Beenden der Aufnahme drücken Sie dieselbe Taste erneut. Diese Taste hat dieselbe Funktion wie die VTR-Taste am Objektiv. Zum Betätigen dieser Taste entfernen Sie die Abdeckung.

②7 Objektivfassung (Spezial-Bajonettfassung)

Schließen Sie hier das Objektiv an.

②8 Aufnahmekontrollampe

Diese Lampe leuchtet oder blinkt, wenn die REC-Anzeige im Sucher leuchtet oder blinkt.

②9 Konturenanhebungsschalter [PEAKING]

Zur leichteren Schärfeneinstellung können mit diesem Schalter die Bildkonturen angehoben werden. Bei jedem Drücken dieses Schalters wird die Funktion abwechselnd ein- und ausgeschaltet.

③0 AUDIO/FILTER-Schalter *

AUDIO: Der Aufnahmepegel von Tonkanal 1 kann am AUDIO CH-1-Regler eingestellt werden. Die FILTER/AUDIO-Anzeige im Sucher zeigt den Tonaufnahmepegel an.

FILTER: An der FILTER/AUDIO-Anzeige im Sucher wird die am FILTER-Wähler eingestellte Filternummer angezeigt. Verwenden Sie stets diese Position, außer wenn die Kamera zusammen mit einem BVV-1PS der Serien-Nr. 50000 oder höher oder einem BVV-1APS verwendet wird.

**③1 Aufnahmepegelregler für Tonkanal 1
[AUDIO CH-1] ***

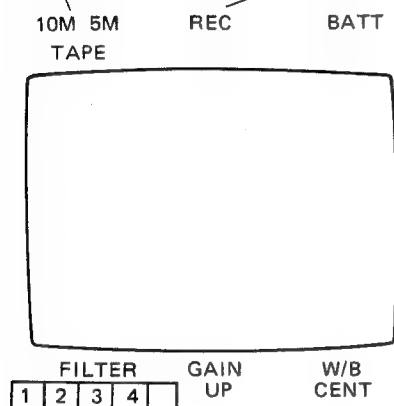
Wenn der AUDIO CH-1 MANU/AUTO-Wähler an der BVV-1PS/BVV-1APS auf MANU und der AUDIO/FILTER-Schalter ③0 auf AUDIO gestellt ist, so kann der Aufnahmepegel von Tonkanal 1 manuell eingestellt werden. Beobachten Sie bei dieser Einstellung die FILTER/AUDIO-Anzeige im Sucher.

- * Dieser Schalter und dieser Regler arbeiten nur, wenn die BVP-3AP zusammen mit einem BVV-1PS der Serien-Nr. 50000 oder höher oder mit einem BVV-1APS verwendet wird.

Anzeigen im Sucher

Anzeigen für verbleibende Aufnahmezeit

Zeigt das zur Aufnahme noch zur Verfügung stehende Band in Minuteneinheiten an. Die Anzeigen arbeiten nur, wenn BVP-3AP und BVV-1PS/BVV-1APS direkt über den 50-poligen Anschluß verbunden sind.



Aufnahmeanzeige [REC] (rot)

Diese Anzeige leuchtet während Aufnahme und blinkt, wenn eine der Warnlampen am BVV-1PS/BVV-1APS blinkt oder leuchtet. Genauere Informationen finden Sie in der Bedienungsanleitung des Videorecorders.

Batterieanzeige [BATT] (rot)

Sind die Batterien erschöpft, so beginnt diese Anzeige einige Minuten, bevor die Spannung den zum einwandfreien Funktionieren notwendigen Wert unterschreitet, zu blinken. Ist der Wert überschritten, leuchtet die Anzeige konstant auf.

Anzeige für Weiß/Schwarzabgleich und Zentrierung [W/B CENT] (orange)

Leuchtet auf, wenn der automatische Weißabgleich, Schwarzabgleich und die Zentriereinstellung beendet sind. Nach 5 Sekunden erlischt die Anzeige. War keine automatische Einstellung möglich, so blinkt die Anzeige ca. 5 Sekunden lang.

FILTER/AUDIO-Anzeige

Wenn der AUDIO/FILTER-Schalter auf AUDIO gestellt ist, so wird der Tonpegel angezeigt. Steht der Schalter dagegen auf FILTER, so wird die am FILTER-Wähler gewählte Filternummer angezeigt.

Verstärkungsanzeige [GAIN UP]

Diese Anzeige leuchtet, wenn der GAIN-Wähler auf „9“ oder „18“ eingestellt ist.

Bedeutung der Anzeige für verbleibende Aufnahmezeit

Diese Anzeigen arbeiten nur, wenn BVP-3AP und BVV-1PS/BVV-1APS direkt über die 50-poligen Anschlüsse verbunden sind.

Noch zur Verfügung stehende Zeit (Minuten)	20	15	10	5	2	0
Anzeigen	10M 5M	10M	5M	5M		
Aufnahmeanzeige	REC					REC*

 : Blinkt mit 1 Hz

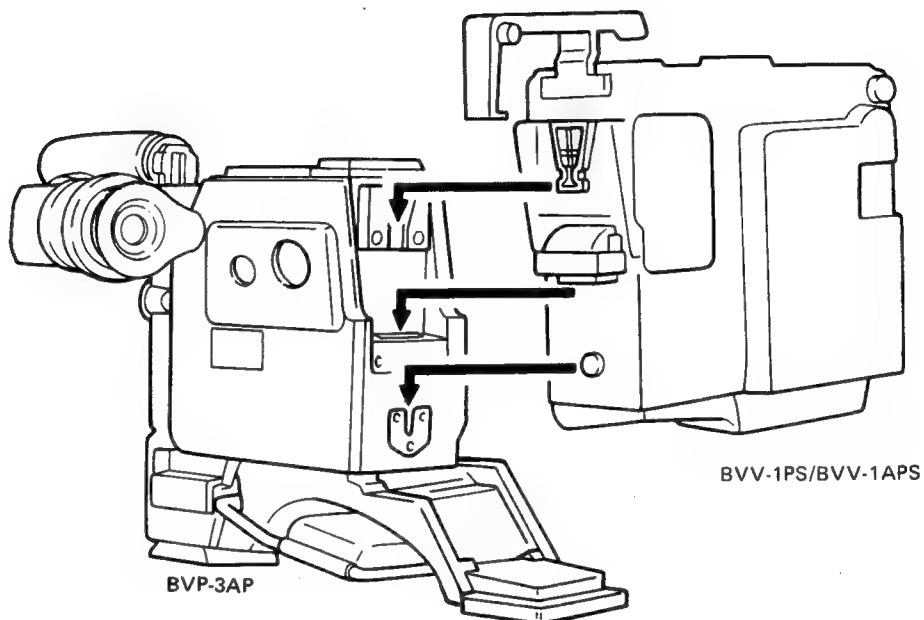
* : Blinkt mit 4 Hz

1-3. ZUSAMMENBAU

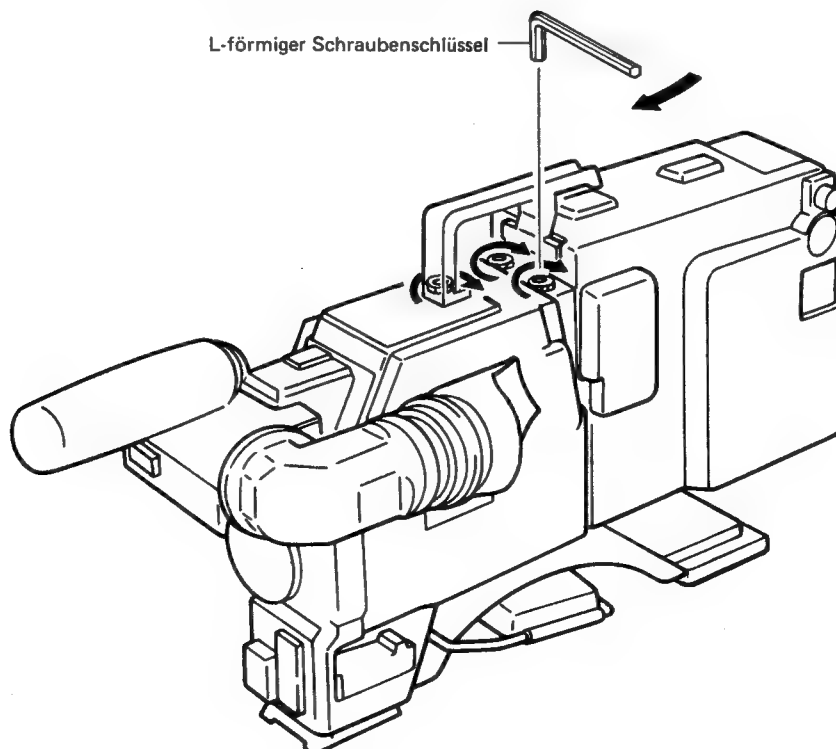
1-3-1. Zusammenschluß mit Videorecorder BVV-1PS/BVV-1APS

Im folgenden wird beispielhaft der Zusammenschluß der BVP-3AP mit dem tragbaren Videorecorder BVV-1PS/BVV-1APS gezeigt. Um die BVV-3AP zusammen mit einem anderen Gerät zu betreiben, lesen Sie bitte die mit dem jeweiligen Gerät mitgelieferte Bedienungsanleitung.

1.

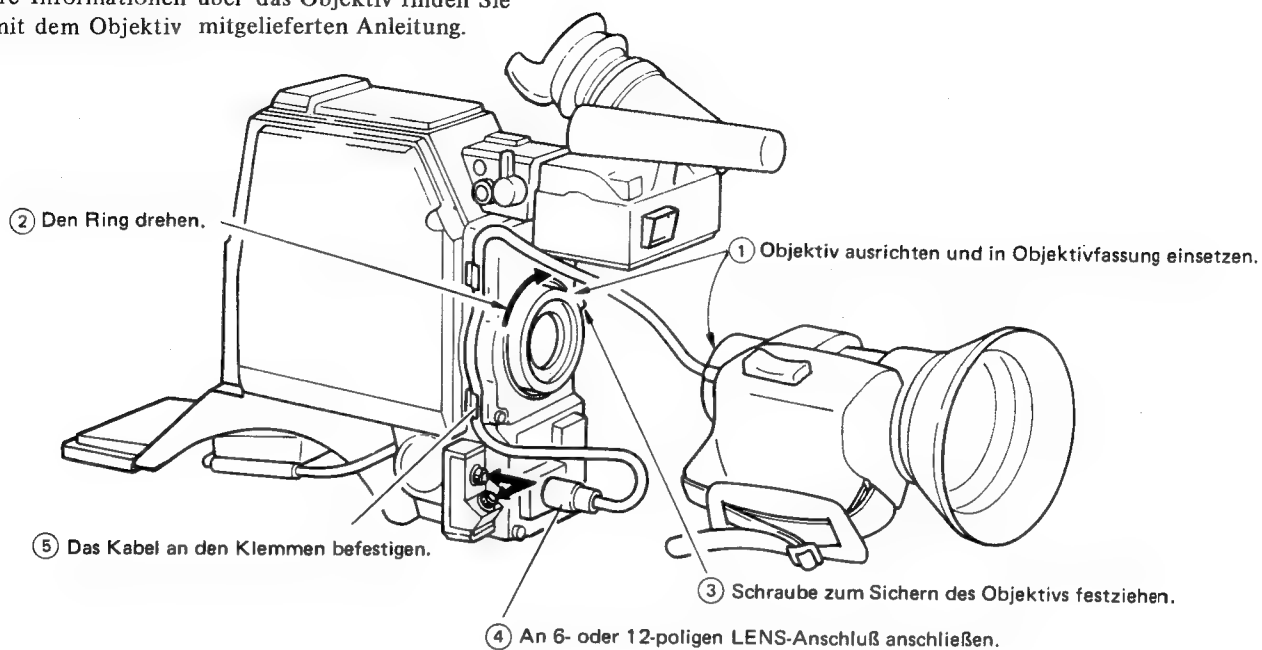


2. Ziehen Sie die beim BVV-1PS/BVV-1APS mitgelieferten Schrauben gut fest.

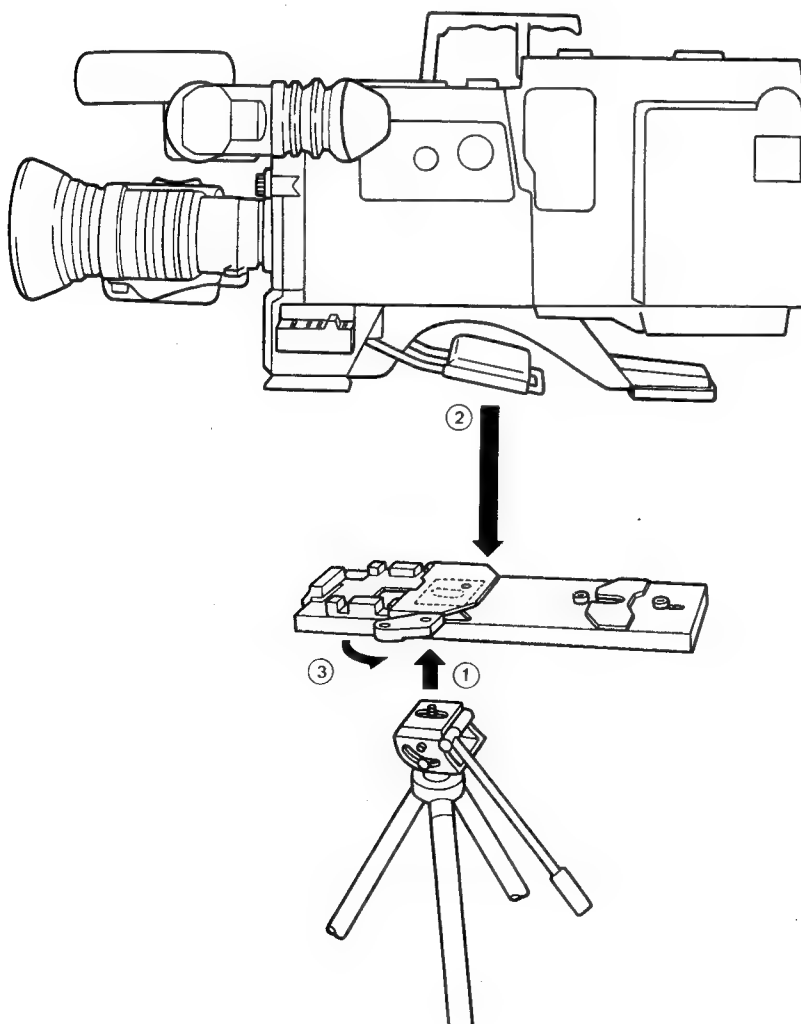


1-3-2. Anbringung des Objektivs

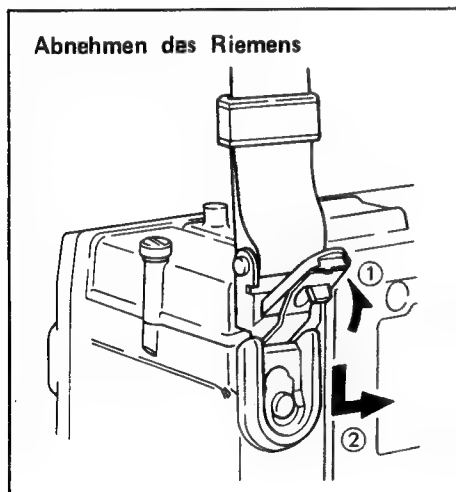
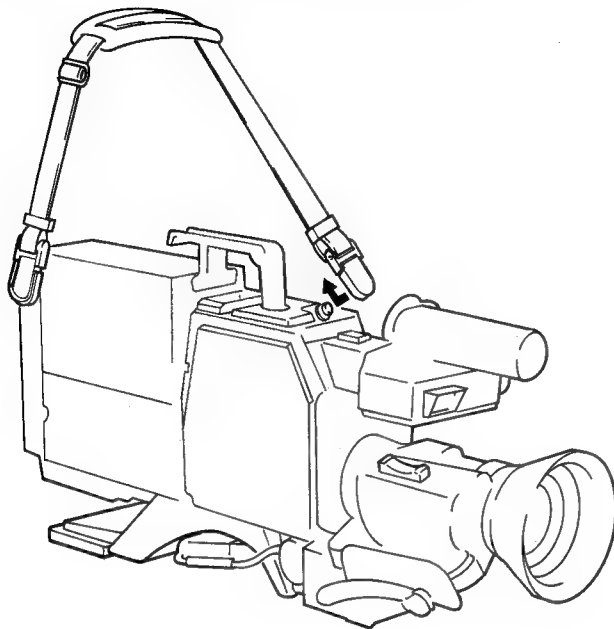
- Genauere Informationen über das Objektiv finden Sie in der mit dem Objektiv mitgelieferten Anleitung.



1-3-3. Anbringung eines Stativs



1-3-4. Anbringung des Schulterriemens

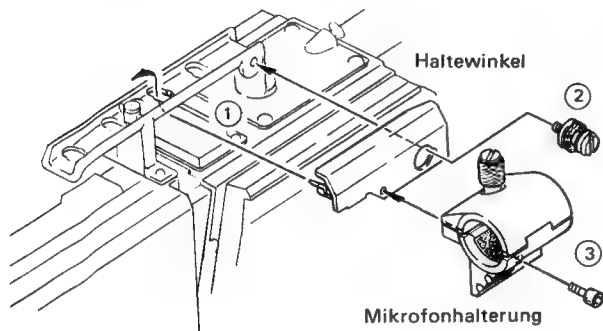


1-3-5. Anbringung eines Außenmikrofons

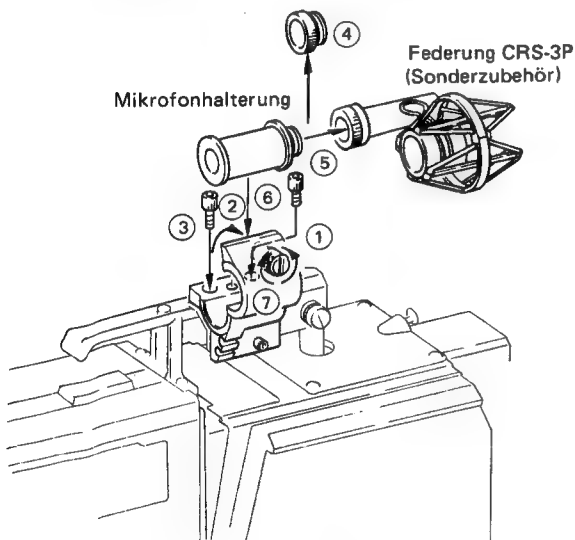
Bei Verwendung einer Federung

Wenn eine BVP-3AP mit dem BVV-1PS/BVV-1APS als eine BVW-3P/BVW-3AP verwendet wird, bringen Sie ein Mikrofon mit Federung an der Kamera an, und keine störenden Vibrationen vom Videorecorder können zum Mikrofon gelangen.

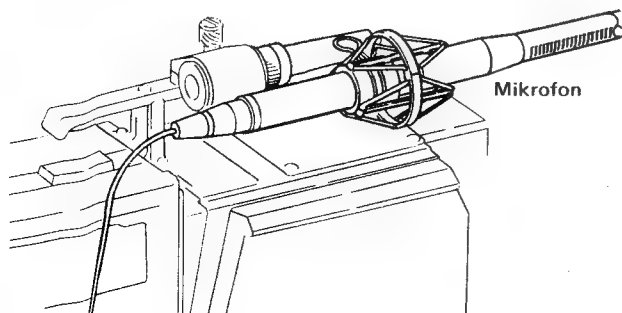
1. Bringen Sie Haltewinkel und Mikrofonhalterung jeweils mit einer Schraube am Griff an.



2. Befestigen Sie die Mikrofonhalterung, klemmen Sie die Federung an der Halterohr fest und drehen Sie die Schraube zu.



3. Bringen Sie das Mikrofon an der Federung an.

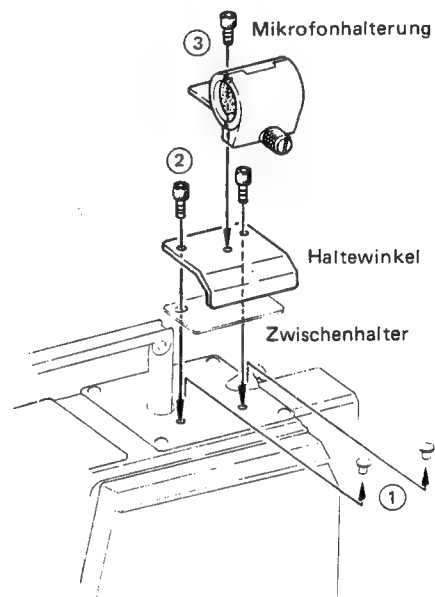


4. Stecken Sie das Mikrofonkabel in den MIC IN-Anschluß des Videorecorders.

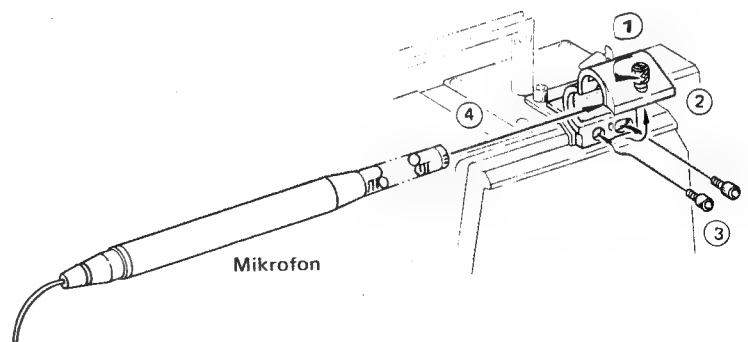
Wenn keine Federung verwendet wird

Diese Methode empfiehlt sich nur, wenn die BVP-30P über den CA-3 oder CA-30P an die Videorecorder angeschlossen wird. Wenn die Kamera dagegen direkt mit einem BVV-1PS/BVV-1APS zusammengeschlossen wird, sollte auf jeden Fall die Federung verwendet werden, da sonst Laufgeräusche von dem Videorecorder mit aufgenommen werden.

1. Nehmen Sie die Kappen an der Kamera ab und bringen Sie Haltewinkel sowie Mikrofonhalterung an der Kamera an.



2. Befestigen Sie die Mikrofonhalterung, klemmen Sie das Mikrofon in der Mikrofonhalterung fest und drehen Sie die Schraube zu.
Ist der Mikrofondurchmesser zu klein, klemmen Sie das Mikrofon im mitgelieferten Adapter ein.



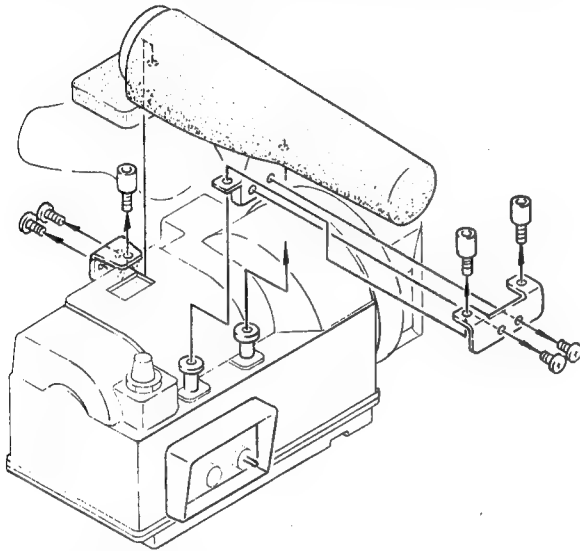
3. Stecken Sie das Mikrofonkabel in den MIC IN-Anschluß am Kameraadapter.

1-4. STROMVERSORGUNG

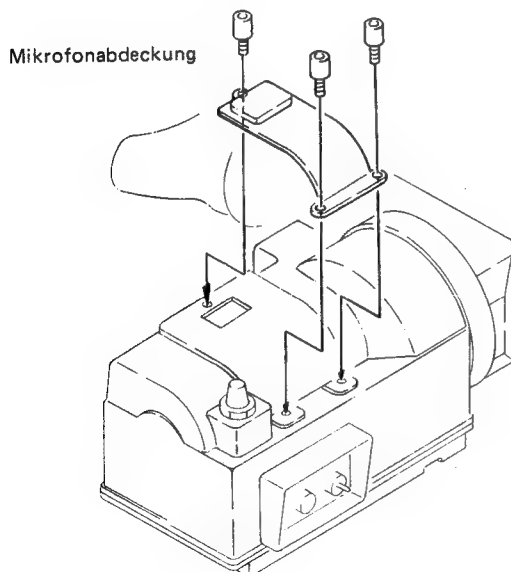
Abnehmen des eingebauten Mikrofons

Bei Anschluß eines Außenmikrofons wird das Signal vom eingebauten Mikrofon automatisch abgeschaltet. Das Mikrofon kann wie folgt beschrieben abgenommen werden. Bei abgenommenem Mikrofon bringen Sie die mitgelieferte Abdeckung an.

1. Das eingebaute Mikrofon und den Anschluß abnehmen.



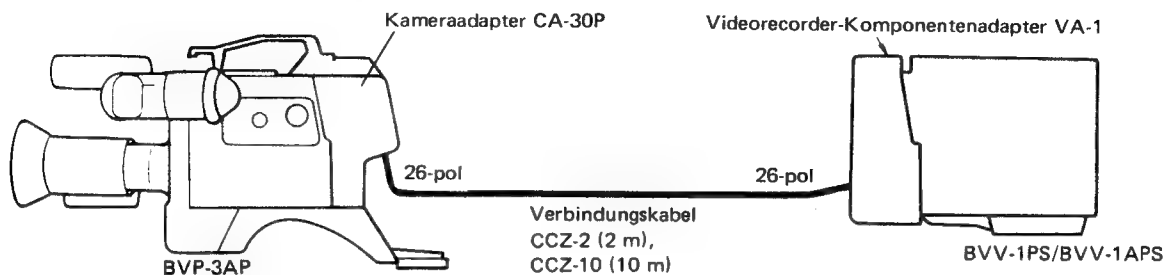
2. Die Mikrofonabdeckung abnehmen.



1-5. ANSCHLÜSSE

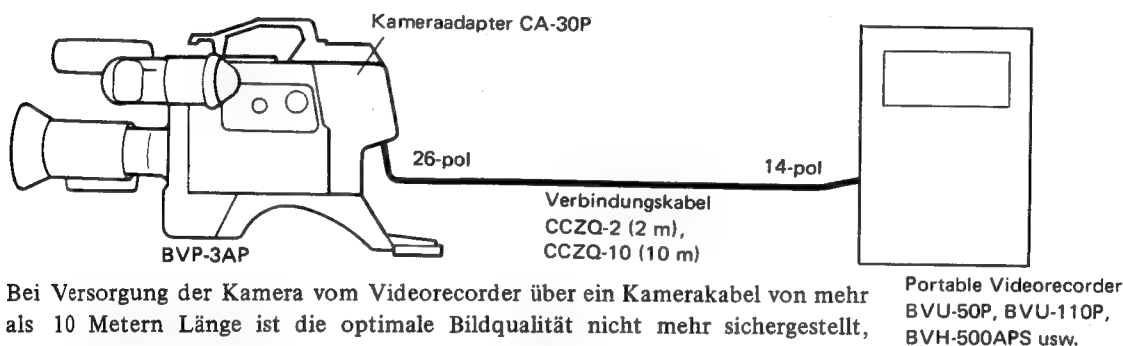
Außer dem direkten Zusammenschluß von BVP-3AP und BVV-1PS/BVV-1APS über die 50-poligen Anschlüsse kann die BVP-3AP auch folgendermaßen verwendet werden:

Anschluß des BVV-1PS/BVV-1APS unter Verwendung eines Verbindungskabels



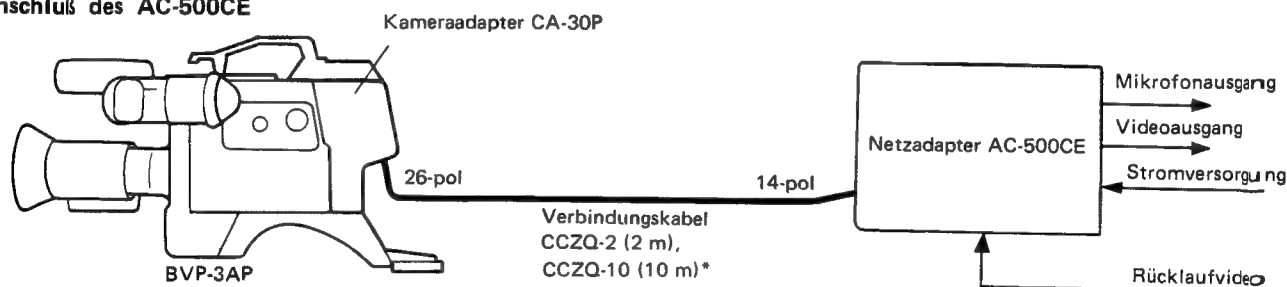
- Der FBAS/Komponenten-Adapter VA-1VP kann auf die gleiche Weise angeschlossen werden.

Anschluß eines herkömmlichen portablen Videorecorders



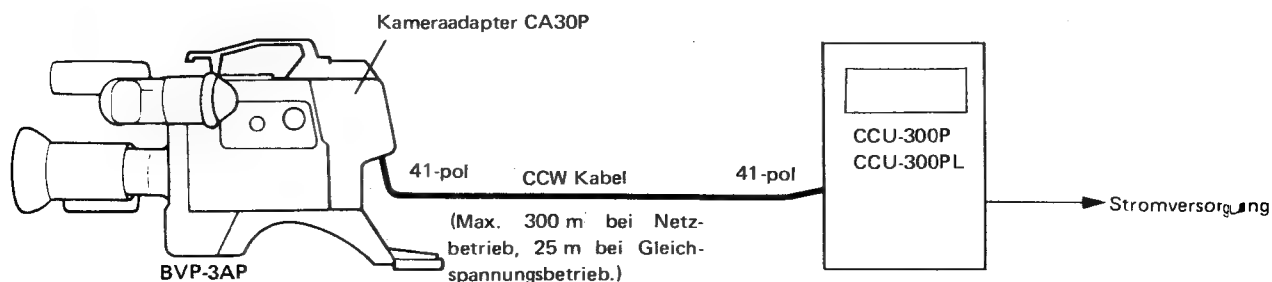
- Bei Versorgung der Kamera vom Videorecorder über ein Kamerakabel von mehr als 10 Metern Länge ist die optimale Bildqualität nicht mehr sichergestellt, sobald die BATT-Anzeige im Sucher zu Blinken beginnt.

Anschluß des AC-500CE



- * Um ausschließlich den Versorgungsstrom an die Kamera zu leiten, verbinden Sie CA-30P und AC-500CE mit einem 4-poligen Kabel.
- Wenn der AC-500CE über ein 4-poliges Kabel mit dem Videorecorder verbunden wird, so wird der Videorecorder mit Strom versorgt.

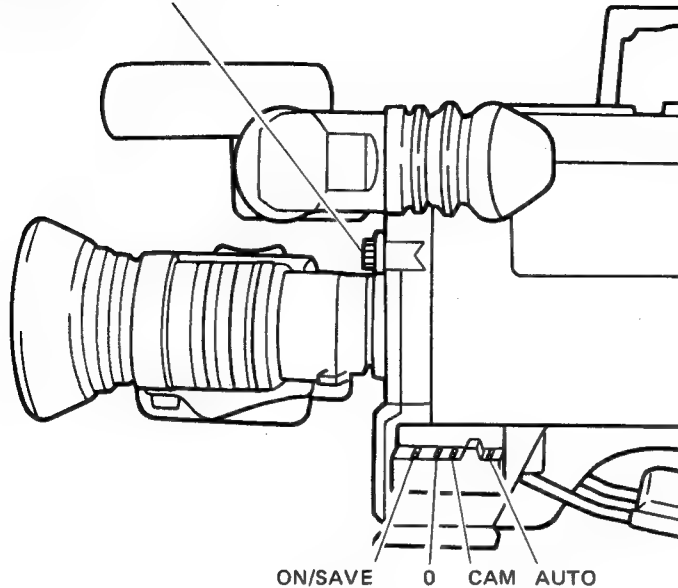
Anschluß einer CCU-300P/CCU-300PL



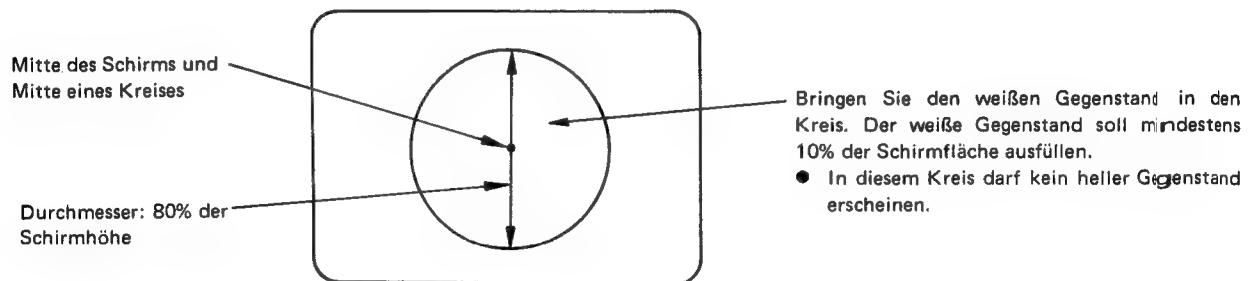
1-6. EINSTELLUNGEN

1-6-1. Weiß- und Schwarzabgleich

1. Stellen Sie den FILTER-Wähler entsprechend den Lichtverhältnissen ein.



2. Stellen Sie die Schalter folgendermaßen ein.
3. Zoomen Sie unter den gleichen Lichtverhältnissen wie bei der späteren Aufnahme auf das weiße Testbild. Statt des weißen Testbildes kann auch eine andere weiße Fläche wie z.B. ein weißes Tuch oder eine weiße Wand verwendet werden.
Folgende minimale weiße Fläche ist zur Einstellung erforderlich.



4. Ist eine Automatikblende vorhanden, so stellen Sie den Auto/Manuell-Schalter auf AUTO. Falls nicht, stellen Sie die Blende manuell ein.
5. Stellen Sie den AUTO W/B BAL-Schalter auf BLK. Beim Loslassen kehrt der Schalter automatisch in die Mittelstellung zurück. Nach ca. 5 Sekunden ist der Schwarzabgleich automatisch durchgeführt, und die W/B CENT-Anzeige leuchtet im Sucher auf. Nach ca. 5 Sekunden erlischt die Anzeige wieder. Der eingestellte Wert wird abgespeichert.
 - Wenn der Schalter auf BLK gestellt wird, schließt sich der Verschuß.

6. Stellen Sie den AUTO W/B BAL-Schalter auf WHT. Nach ca. 1 Sekunde ist der Weißabgleich genau wie oben automatisch durchgeführt und der eingestellte Wert wird abgespeichert.

Weiß- und Schwarzabgleich sind damit beendet.

- Sobald die W/B CENT-Anzeige leuchtet, kann mit der nächsten Einstellung begonnen werden. Die Anzeige erlischt, wenn der Schalter in die andere Position gestellt wird, und leuchtet nach Beendigung der Einstellung wieder auf.
- Bei Verwendung eines Zoomobjektivs können Regelschwingungen auftreten. Ändern Sie in diesem Fall die Einstellung des AUTO IRIS GAIN-Reglers am Objektiv. (Genauere Informationen dazu finden Sie in der Bedienungsanleitung des Objektivs.)
- Wenn der AUTO W/B BAL-Schalter auf BLK gestellt wird, so ändert sich automatisch die Einstellung des GAIN-Wählers, und das Sucherbild ist möglicherweise gestört. Dies stellt jedoch kein Problem dar.
- Wenn sich die Beleuchtungsverhältnisse ändern, so führen Sie nur den Weißabgleich neu durch. Eine neue Einstellung des Schwarzabgleichs ist nicht erforderlich.

Wenn die W/B CENT-Anzeige blinkt

Überprüfen Sie, ob der richtige Filter gewählt wurde, und führen Sie Weiß- und Schwarzabgleich erneut durch.

Wenn der WHITE BAL-Schalter auf PRESET gestellt wird

In der Stellung „1“ des FILTER-Wählers erhält man einen Weißabgleich für 3200°K. Zum Schwarzabgleich ist lediglich der AUTO W/B BAL-Schalter auf BLK zu stellen.

Abspeichern der Weiß- und Schwarzabgleichwerte

Schwarz- und Weißabgleichwerte können in der BVP-3AP abgespeichert werden. Es sind vier Memories vorhanden, so daß für jeden Filter ein Weiß- und Schwarzabgleichwert abgespeichert werden kann. Die abgespeicherten Werte bleiben bis ca. eine Woche nach Abschalten der Stromzufuhr bzw., bis eine Neueinstellung durchgeführt wird, erhalten.

1-6-2. Schwarzeinstellung

Mit dem AUTO W/B BAL-Schalter wird die Schwarzeinstellung automatisch mit dem Schwarzabgleich durchgeführt.

Zur manuellen Schwarzeinstellung verwenden Sie den Regler auf der eingebauten Platine. Genauere Informationen finden Sie im Teil 2.

1-6-3. Zentrierung

Die R-, G- und B-Aufnahmeröhren werden werkseitig zentriert, so daß normalerweise keine Einstellung erforderlich ist. Sollte dennoch eine Einstellung notwendig werden, so gehen Sie folgendermaßen vor.

Stellen Sie zunächst den Weißabgleich wie unter 1-6-1. beschrieben ein.

1. Stellen Sie den AUTO CENT-Schalter auf MEMORY.
2. Stellen Sie den Blenden-Auto/Manuell-Schalter am Objektiv auf AUTO. Die Blende sollte dabei nicht ganz geöffnet sein. Ist sie ganz geöffnet, so erhöhen Sie die Beleuchtungsstärke.
3. Nehmen Sie das mitgelieferte Testbild oder einen Gegenstand auf.

Verwendung des mitgelieferten Testbildes

Richten Sie die Kamera so aus, daß das mitgelieferte Testbild den gesamten Bildschirm füllt.

Ohne Verwendung des mitgelieferten Testbildes

Richten Sie die Kameraposition so aus, daß der Gegenstand in einem Kreis liegt, dessen Mittelpunkt sich in der Mitte des Bildschirms befindet und dessen Durchmesser 80% der Bildschirmhöhe beträgt.

- Verwenden Sie einen Gegenstand, der horizontale und vertikale Linien mit geeignetem Kontrast aufweist.
 - Wenn möglich verwenden Sie ein Schwarzweißbild, so daß die R-, G- und B-Pegel nahezu gleich sind. Ist der Gegenstand einfarbig oder ist eine der Farben sehr dunkel, so kann dies zu Zentrierungsfehlern führen.
 - Verwenden Sie keinen sich bewegenden Gegenstand, und bewegen Sie auch die Kamera nicht während der Einstellung.
 - Verwenden Sie keinen Gegenstand mit sehr dünnen Linien, also auch kein Testbild zur Farbdeckungseinstellung.
4. Stellen Sie den AUTO CENT-Schalter auf START. Beim Loslassen kehrt dieser Schalter automatisch in die MEMORY-Stellung zurück. Nach ca. 10 Sekunden ist die Zentrierung automatisch eingestellt, und im Sucher leuchtet die W/B CENT-Anzeige auf. Die Anzeige erlischt nach ca. 5 Sekunden wieder.
- Während die Zentrierung durchgeführt wird, wird die Schärfenanhebung ausgeschaltet und die in einem Kreis mit einem Durchmesser von 70% der Bildschirmhöhe liegenden Kanten werden schärfer abgebildet.

5. Führen Sie den Weißabgleich erneut durch, da Zentrierungsfehler den Weißabgleich beeinflussen können.

Wenn die W/B CENT-Anzeige blinkt

Es wurde ein ungeeigneter Testgegenstand verwendet oder ...

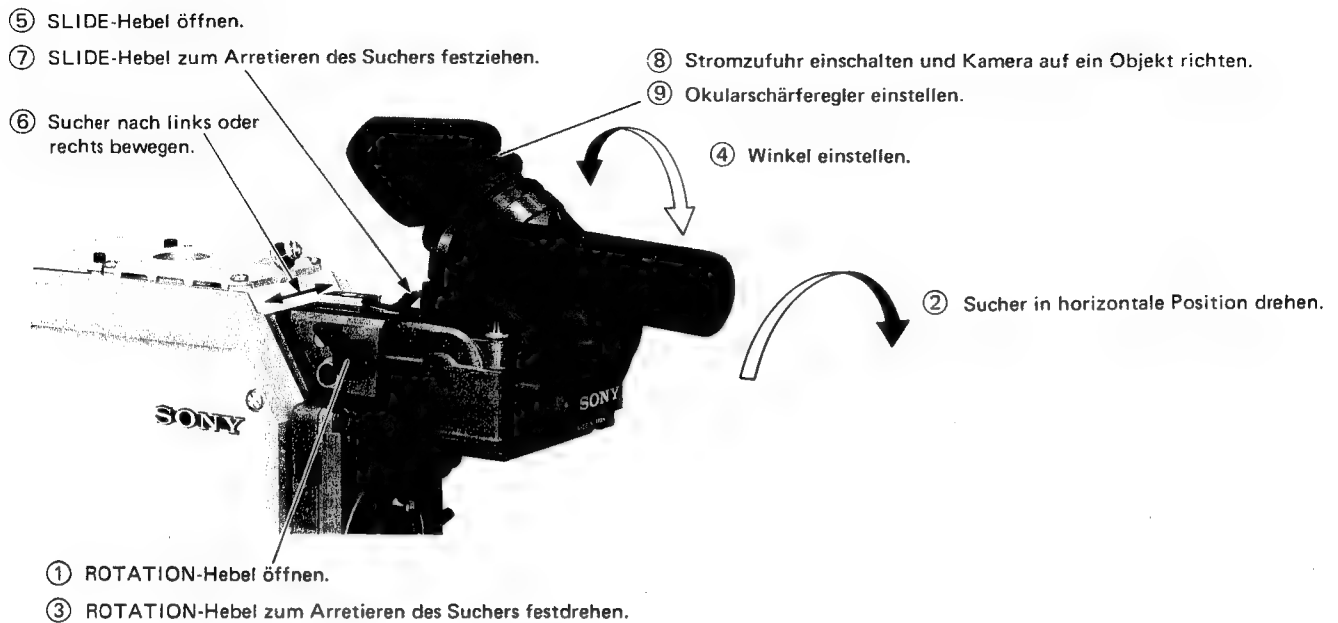
- der Gegenstand besitzt nicht genug Kanten und nicht genug Kontrast.
- die Blende ist falsch eingestellt.
- der Gegenstand ist nicht scharfgestellt.
- der Gegenstand hat sich während der Einstellung bewegt.
- der Zentrierungsbereich wurde überschritten.

Stellen Sie die Ursache fest, und nehmen Sie den Abgleich erneut vor.

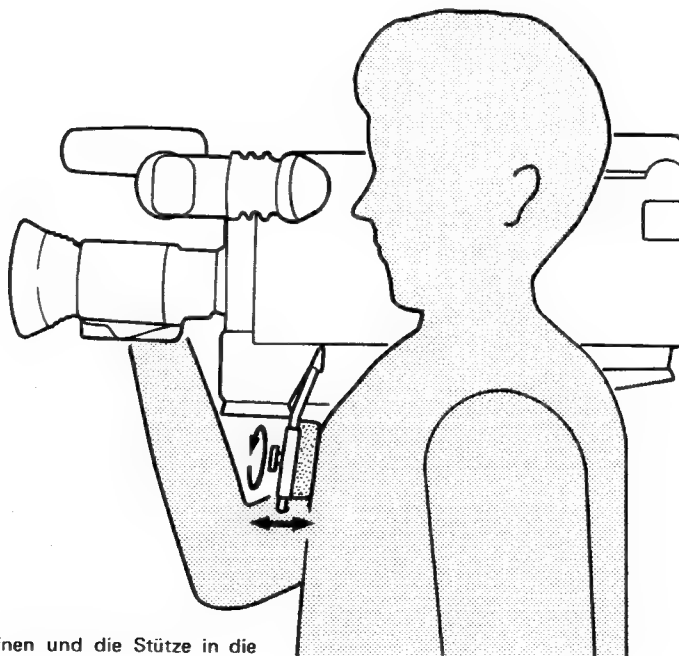
Abspeichern des Zentrierungswertes

Der eingestellte Zentrierungswert kann genau wie die Weiß- und Schwarzabgleichwerte gespeichert werden, wobei die Speicherung noch ca. eine Woche nach Abschalten der Stromzufuhr erhalten bleibt. Wenn dieser Zeitraum überschritten wird, erhält man im Memory den werkseitig voreingestellten Wert.

1-6-4. Suchereinstellungen

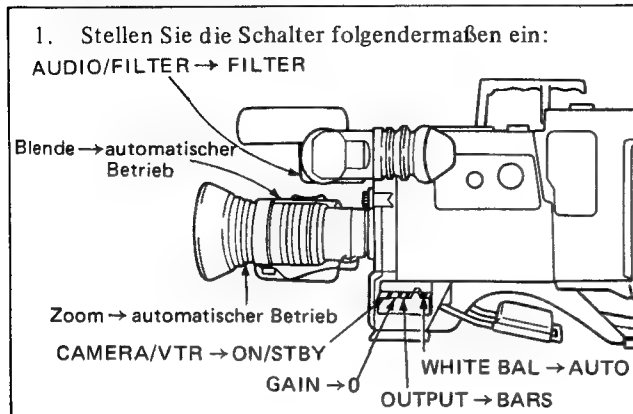


1-6-5. Ausrichten der Stütze



1-7. FUNKTIONSKONTROLLEN

- Im folgenden wird ein Bedienungsbeispiel gegeben. Genauere Informationen zur Bedienung des Objektivs finden Sie in der mit dem Objektiv mitgelieferten Bedienungsanleitung.



2. Stellen Sie den Sucher ein.
3. Vergewissern Sie sich, daß die Farbbalken auf dem Sucherschirm erscheinen.
4. Stellen Sie den BRIGHT- und CONTR-Regler so ein, daß die Farbbalken auf dem Sucherschirm klar abgebildet werden.
5. Wechseln Sie die FILTER-Wählereinstellung von 1 → 2 → 3 → 4, und überprüfen Sie, ob der richtige Wert im Sucher angezeigt wird.
6. Stellen Sie den OUTPUT-Wähler auf CAM.
7. Richten Sie die Kamera auf ein Motiv.
8. Stellen Sie das Motiv durch Drehen des Fokussierings scharf ein. Überprüfen Sie, ob das Bild auf dem Sucherschirm erscheint.
9. Überprüfen Sie das Motorzoom.

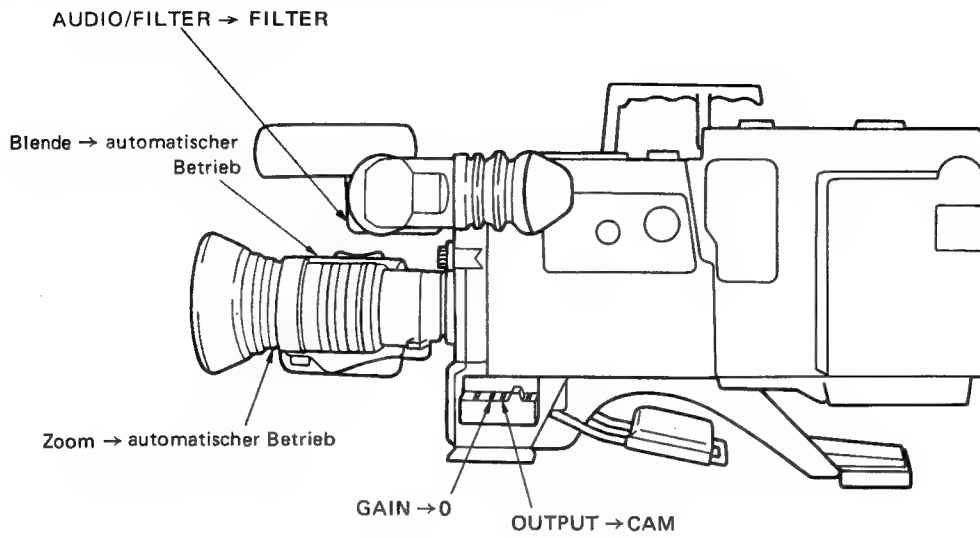
10. Stellen Sie das Zoom auf manuellen Betrieb.
11. Überprüfen Sie das manuelle Zoomen.
12. Stellen Sie das Zoom auf automatischen Betrieb.
13. Richten Sie die Kamera auf Motive unter verschiedenen Helligkeitsniveaus und überprüfen Sie, ob die automatische Blendeneinstellung funktioniert.*
14. Stellen Sie die Blende auf manuellen Betrieb.
15. Drehen Sie den Blendenring, um die manuelle Blendeneinstellung zu überprüfen.
16. Drücken Sie die Sofort-Auto-Taste und halten Sie sie in gedrückter Stellung, um kurz auf automatische Blendeneinstellung zu schalten. Richten Sie die Kamera auf Motive unter verschiedenen Helligkeitsniveaus, um die Einstellung zu überprüfen.
17. Stellen Sie die Blende auf automatischen Betrieb.
18. Stellen Sie den GAIN-Wähler auf 9, dann auf 18. Überprüfen Sie, ob sich die Blende jeweils um eine Stufe schließt und ob die GAIN UP-Anzeige leuchtet.
19. Stellen Sie den GAIN-Wähler auf 0.

* Bei Verwendung eines Objektivs mit 6-poligem Anschluß können Regelschwingungen auftreten. Stellen Sie in diesem Fall den AUTO IRIS GAIN-Regler am Objektiv ein. (Genauere Informationen finden Sie in der Bedienungsanleitung des Objektivs.)

1-8. BETRIEB

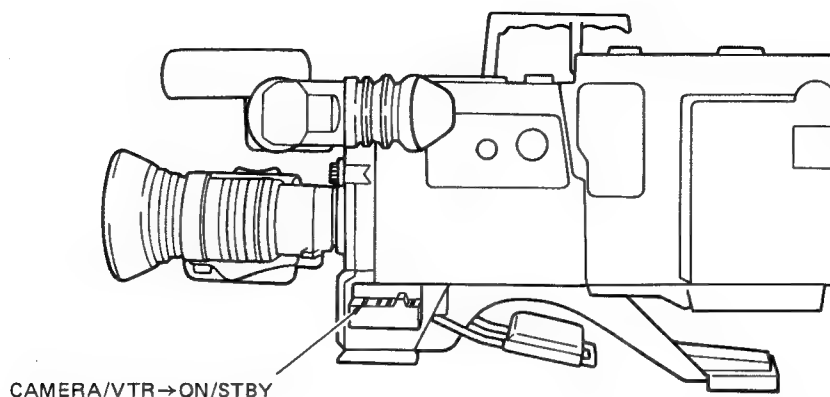
1-8-1. Vorbereitung

Stellen Sie die Schalter vor dem Betrieb folgendermaßen ein:



1-8-2. Kameraaufnahme

1. Schalten Sie die Kamera und die anderen Geräte ein.



2. Setzen Sie eine Cassette ein.
3. Wählen Sie den entsprechenden Filter.
4. Stellen Sie den Weiß- und Schwarzabgleichwert ein.
Wenn der Weiß- und Schwarzabgleichwert gespeichert ist,
stellen Sie den WHITE BAL-Schalter auf AUTO.
Wenn der Weiß- und Schwarzabgleichwert nicht gespeichert ist, Sie jedoch schnell mit der Aufnahme beginnen wollen,
stellen Sie den WHITE BAL-Schalter auf PRESET und den AUTO W/B BAL-Schalter auf BLK. Man erhält dann einen Weiß- und Schwarzabgleich für 3200°K.

Durchführung des Weiß- und Schwarzabgleichs

- ① Stellen Sie den WHITE BAL-Schalter auf AUTO.
 - ② Richten Sie die Kamera auf einen weißen Gegenstand.
 - ③ Stellen Sie den AUTO W/B BAL-Schalter auf BLK. Sobald die W/B CENT-Anzeige im Sucher aufleuchtet, ist der Schwarzabgleich durchgeführt.
 - ④ Stellen Sie den AUTO W/B BAL-Schalter auf WHT. Sobald die W/B CENT-Anzeige im Sucher aufleuchtet, ist der Weißabgleich durchgeführt.
 - Genauere Informationen finden Sie unter „1-6-1. Weiß- und Schwarzabgleich“.
5. Richten Sie die Kamera auf das Motiv und stellen Sie Schärfe und Zoom ein.
 6. Drücken Sie die VTR-Taste, um mit der Aufnahme zu beginnen. Die REC-Anzeige im Sucher leuchtet während der Aufnahme.
 7. Um die Aufnahme zu beenden, drücken Sie die VTR-Taste erneut.

Aufnahme bei schwacher Beleuchtung

Wenn die Beleuchtung so schwach ist, daß man bei normaler Einstellung kein klares Bild erhält, stellen Sie den GAIN-Schalter auf „9“ oder „18“. In der Position 9 des GAIN-Schalters wird der Videoausgangspegel um 9 dB und in der Position 18 um 18 dB erhöht.

- Normalerweise ist der Wähler auf „0“ zu stellen.

Überprüfung des Videopegels

Ein Streifenmuster erscheint an der Stelle des Sucherbildschirms, an der Videopegel des Bildes 70% (IRE Einheit) beträgt. Dies stellt eine Hilfe bei der manuellen Blendeneinstellung dar.

Das Zebromuster kann am TALLY/ZEBRA ON/OFF-Schalter abgeschaltet werden. Dies ist jedoch nicht möglich, wenn ein spezieller Schalter an einer internen Leiterplatte auf OFF gestellt wird. Genauere Informationen dazu finden Sie im Teil 2.

1-9. VORSICHTSMASSNAHMEN

Die Kamera nie direkt gegen die Sonne halten.

Wenn man die Kamera direkt gegen die Sonne hält oder auf eine andere starke Lichtquelle richtet, kann die Aufnahmeröhre beschädigt werden. Durch Daueraufnahmen von hell beleuchteten Motiven kann die Aufnahmeröhre ebenfalls Schaden nehmen. Falls Aufnahmen bei heller Beleuchtung gemacht werden müssen, schließen Sie die Blende soweit wie möglich.

Gehen Sie sorgsam mit der Kamera um und vermeiden Sie Erschütterungen.

Nach dem Gebrauch der Kamera

Den Strom des an die Kamera angeschlossenen Gerätes abschalten.

Betriebsumgebung und Aufbewahrungsplatz

Betreiben Sie die Kamera nicht an den nachstehend aufgeführten Plätzen, und bewahren Sie sie dort auch nicht auf:

Extrem heiße oder feuchte Plätze (die Betriebstemperatur reicht von -20°C bis $+40^{\circ}\text{C}$).

Plätze, an denen die Kamera direkter Sonnenbestrahlung, übermäßig viel Staub und Erschütterungen ausgesetzt ist.

Plätze, an denen die Kamera starken Magnetfeldern ausgesetzt ist.

Bewahren Sie die Kamera waagrecht liegend auf und sorgen Sie für ausreichende Luftzufuhr.

Reinigen Sie das Sucherobjektiv mit einer handelsüblichen Objektiv-Reinigungsflüssigkeit.

Verwenden Sie keine Lösemittel wie Alkohol, Benzin oder Verdünner.

1-10. TECHNISCHE DATEN

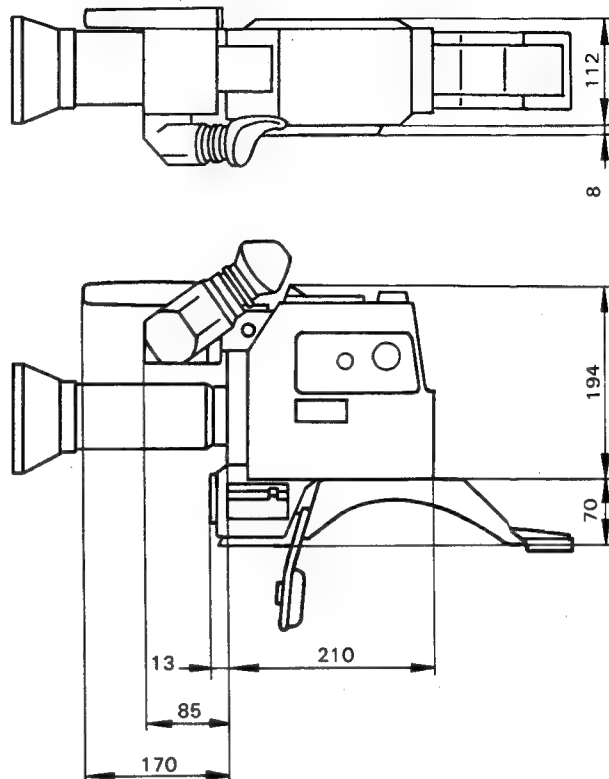
Kamera

Aufnahmeröhre	2/3" Saticon (magnetische Fokussierung, statische Ablenkung)
System	3-Röhren RGB-System (mit Quarzfilter)
Spektralsystem	f 1,4 Prismensystem
Eingebaute Filter	1: 3200°K 2: 5600°K + 1/4ND 3: 5600°K 4: 5600°K + 1/16ND
Objektivbefestigung	Spezial-Bajonettverschluß
Videoausgang	PAL 1,0 Vss, 75 Ohm, unsymmetrisch, Video positiv, zwei Ausgänge (TEST OUT, VTR)
Anschlüsse	VTR: 50-pol (Videoausgang, Mikrofonausgang, Sync-Ausgang, Stromversorgungsseingang) TEST OUT: BNC-Buchse LENS: 6-pol, 12-pol REMOTE: 6-pol
Empfindlichkeit	2000 Lux mit f4,5 (typisch), 89,9% Refl.
Minimale Objektbeleuchtung	30 Lux (f1,4 +18 dB Verstärkung)
Video Signal-Rauschabstand	57 dB (typisch)
Horizontale Auflösung	650 (Mitte)
Farbdeckung	0,1% in Zone I (in einem Kreis, der einen Durchmesser von 80% der Bildhöhe besitzt) 0,15% in Zone II (in einem Kreis, dessen Durchmesser gleich der Bildhöhe ist) 0,3% in Zone III (sonstiger Bereich)
Geometrische Verzerrungen	Weniger als 1%
Stromversorgung	12 V Gleichspannung (10,5 bis 17 V)
Leistungsaufnahme	20 W
Warmlaufzeit	ca. 3,5 Sekunden vom Vorheizbetrieb
Betriebstemperatur	-20°C bis +40°C
Aufbewahrungstemperatur	-20°C bis +60°C
Gewicht	4,6 kg mit Sucher

Änderungen, die dem technischen Fortschritt dienen, bleiben vorbehalten.

Abmessungen

Einheit: mm



Sucher

Bildröhre	1,5" -Monochrom Helligkeitsregler, Kontrastregler, Signallampen/Zebamuster- Ein/Ausschalter, Konturenanhebungsschalter, AUDIO/FILTER-Schalter, Aufnahmepegelregler für Tonanal 1
Auflösung	500 Fernsehzeilen
Mikrofon	Starke Richtwirkung

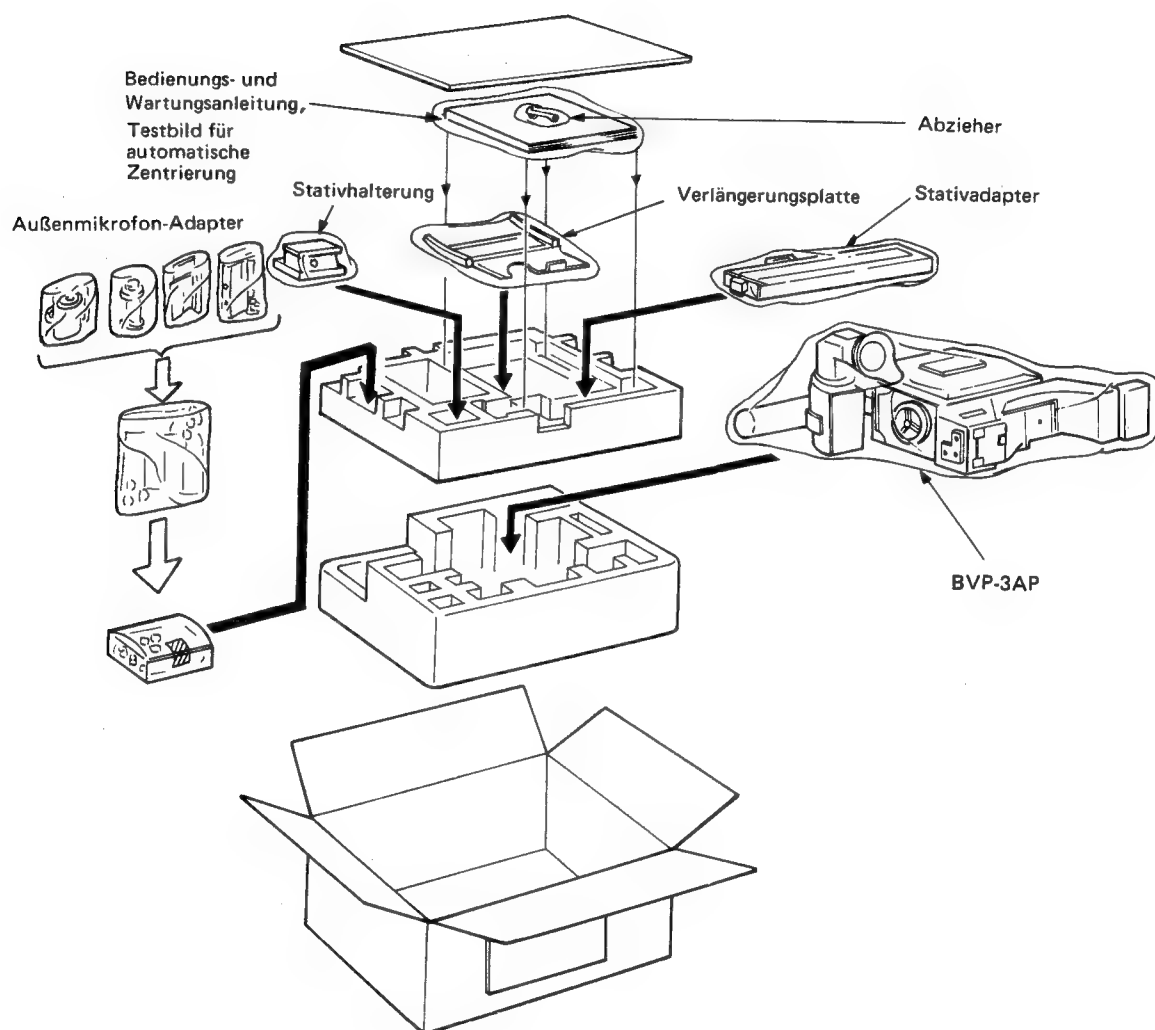
Mitgeliefertes Zubehör

Stativadapter	x1
Stativhalterung	x1
Verlängerungsplatte	x1
Abzieher	x1
Testbild für automatische Zentrierung	x1
Außenmikrofon-Adapter	x1

Empfohlene Geräte

Portabler Videorecorder	BVV-1PS/BVV-1APS
Kameraadapter	CA-3, CA-30P
Netzadapter	AC-500CE
Fernbedieneinheit	RM-P3
Videomonitor	BVF-50

1-11. VERPACKEN DER BVP-3AP



1-12. BEDIENUNG DES BETACAM-SYSTEMS BVW-3P/BVW-3AP

1-12-1. Merkmale

Kompakt und leicht

Kamera BVP-3AP, Videorecorder BVV-1PS/BVV-1APS, Batterie und Cassette wiegen zusammen nur etwa 10 kg.

Kabelloses System

Kamera, Videorecorder, Sucher, Batterie, Mikrofon usw. werden ohne irgendwelche Kabel miteinander verbunden.

Geringe Leistungsaufnahme

Die Leistungsaufnahme ist so gering, daß eine einzige Akkubatterie NP-1 bei einem Zusammenschluß mit dem BVV-1PS/BVV-1APS einen Betrieb von ca. 30 Minuten ermöglicht.

Video- und Audio-Hinterbandkontrolle

Das Video- und Audio-Hinterbandkontrollsystem ermöglicht das Überprüfen des Aufnahmebildes und -tons.

Qualitativ hochwertiges Bild

Das neu entwickelte Aufnahmesystem mit einer 1/2-Zoll-Cassette hat die Bildqualität wesentlich verbessert und kommt nun an die des 1-Zoll-Videorecorderbildes heran. Die drei Plumbicon-Aufnahmeröhren mit der magnetischen Fokussierung und statischen Ablenkung gewährleisten eine hochwertige Bildqualität.

Eingebauter Zeitcodegenerator

Ein eingebauter Zeitcodegenerator gestattet die gleichzeitige Aufnahme des Zeitcodes während des Betriebs. Das Benutzer-Bit kann ebenfalls aufgezeichnet werden.

Unabhängige Zeitcode-Spur

Die Zeitcode-Spur ist von der Video-Spur getrennt, so daß Zeitcodeaufnahme und Löschen mit einem Schnitt-Steuergerät möglich sind.

Zwei Tonkanäle

Der Ton vom eingebauten Mikrofon oder von Außenmikrofonen bzw. von anderen Tonquellen kann auf zwei Tonkanäle getrennt aufgenommen werden.

Zusammenfügen von Einzelszenen

Dank einer speziellen Vertikalintervall-Timing-Einrichtung können einzelne Aufnahmeszenen mit störungsfreien Schnittstellen aneinandergefügt werden.

Warnsystem

Bei Betriebsstörungen leuchten Warnanzeigen auf, und ein Warnton ist sowohl über den Lautsprecher als auch über den Ohrhörer zu hören.

Anzeige für verbleibende Aufnahmezeit

Die noch verbleibende Aufnahmezeit wird im Sucher angezeigt.

Verwendung des Drahtlos-Mikrofonsystems

Ein Empfänger aus dem Sony Drahtlos-Mikrofonsystem kann angebracht werden.

Zusätzliche Akkubatterie

Zusammen mit der im Batteriefach der BVV-1PS/BVV-1APS eingesetzten Akkubatterie kann eine weitere Akkubatterie verwendet werden.

Dolby*-C Rauschverminderungssystem für bessere Tonqualität

Das in diesem Gerät verwendete neuentwickelte Dolby-C Rauschverminderungssystem liefert einen besseren Signal-Rauschabstand und einen größeren Dynamikbereich. Zum Einschalten des Dolby-Schaltkreises siehe Abschnitt 2 der BVV-1PS/BVV-1APS Bedienungsanleitung.

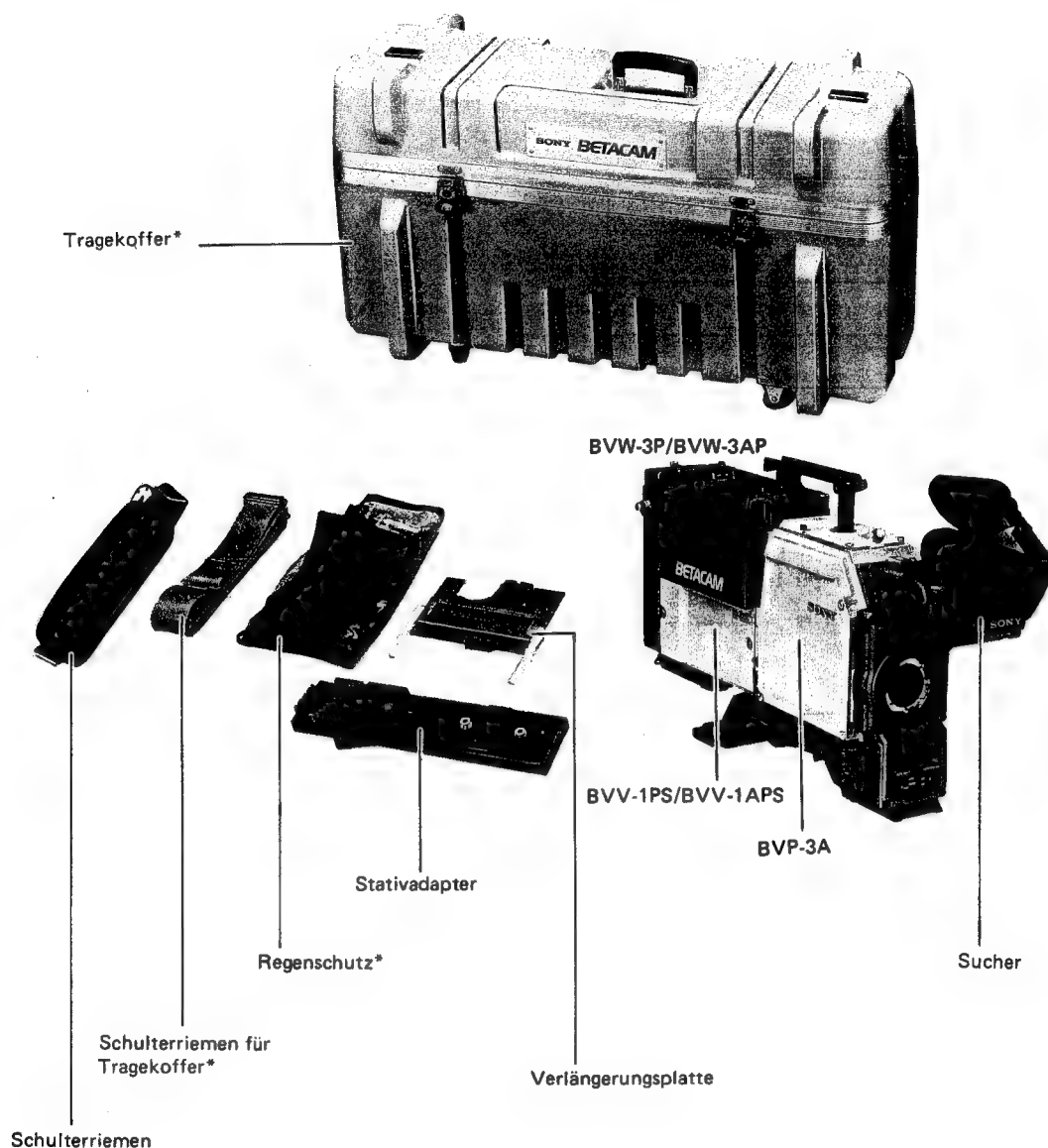
* „Dolby“ und das Doppel-D-Symbol sind Warenzeichen der Dolby Laboratories Licensing Corporation. Das Dolby-Rauschverminderungssystem wird unter Lizenz der Dolby Licensing Corporation hergestellt.

Hinweis

Mit einem BVV-1PS der Serien-Nr. 49999 oder niedriger arbeiten die folgenden Funktionen der BVW-3P/BVW-3AP nicht.

- Tonpegelanzeige im Sucher.
- AufnahmepegelEinstellung von Tonkanal 1.

1-12-2. Bestandteile des BVW-3P/BVW-3AP



Batteriefachdeckelschnur
 Testbild für automatische Zentrierungseinstellung
 Außenmikrofon-Adapter
 Abzieher
 50-Pol Kappen
 Zeitcode-Anschlußkabel
 6-Pol-Anschluß

- * Tragekoffer, Schulterriemen für Tragekoffer und Regenschutz werden mit dem Betacam-System BVW-3P/BVW-3AP mitgeliefert. Bei getrenntem Kauf des Videorecorders BVV-1PS/BVV-1APS und der Kamera BVP-3A werden diese Teile nicht mitgeliefert. Ihre Sony Händler gibt Ihnen gerne genauere Auskünfte bezüglich dieser Teile.

1-12-3. Kontrollroutinen

Vor der Aufnahme empfehlen wir Ihnen, die folgenden Prüfungspunkte durchzugehen, um sicherzustellen, daß das Betacam-System einwandfrei funktioniert. Verwenden Sie hierbei zur Bildkontrolle einen Farbmonitor.

1. Vorbereitung

1. Setzen Sie eine voll aufgeladene Akkubatterie ein.

2. POWER-Schalter → ON

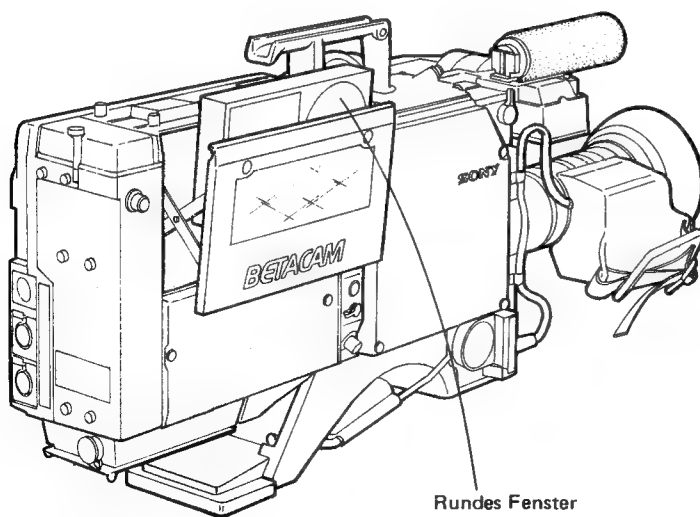
3. Die HUMID-Lampe darf nicht leuchten.

4. Überprüfen Sie die Batterie.
Stellen Sie den METER SELECT-Schalter auf BATT und überprüfen Sie, ob der Instrumenten-
zeiger in die grüne Zone ausschlägt.



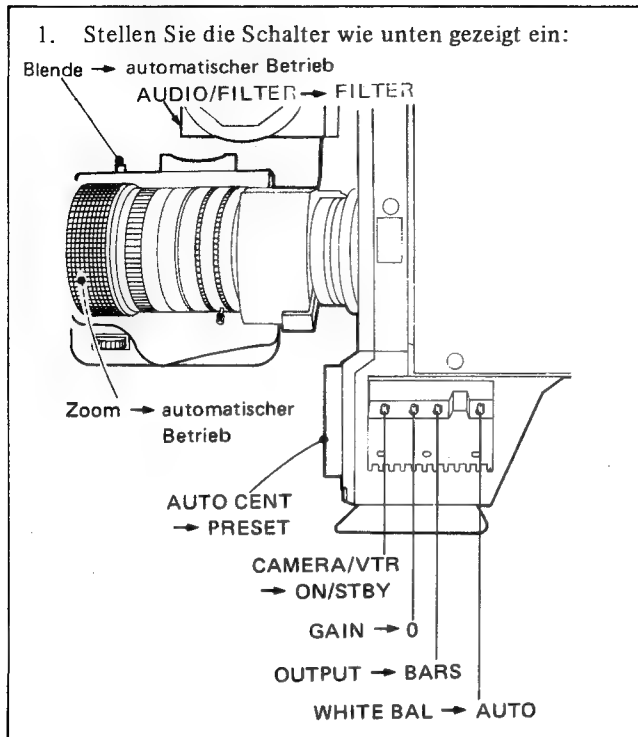
5. Falls erforderlich stellen Sie Zeitcode oder
Benutzer-Bit ein.

6. Setzen Sie eine Cassette ein.



- Stellen Sie sicher, daß die Löchsperre unten an der Cassette vorhanden ist.

2. Überprüfen der Kamera



2. Richten Sie den Sucher aus.

3. Überprüfen Sie, ob die Farbbalken im Sucher erscheinen.

4. Stellen Sie den BRIGHT- und den CONTR-Regler am Sucher so ein, daß die Farbbalken auf dem Sucherschirm klar zu sehen sind.

5. Stellen Sie den FILTER-Wähler nacheinander auf 1 → 2 → 3 → 4, und überprüfen Sie, ob der richtige Wert im Sucher angezeigt wird.

6. Stellen Sie den OUTPUT-Wähler auf CAM.

7. Richten Sie die Kamera auf ein geeignetes Motiv.

8. Drehen Sie den Fokussiererring so, daß das Motiv scharf ist. Überprüfen Sie, ob das Motiv auf dem Sucherschirm erscheint.

9. Überprüfen Sie den Motorzoombetrieb. Durch Drücken der Motorzoomtaste kann vom Weitwinkel- in den Telebereich gefahren werden und umgekehrt.

10. Stellen Sie das Zoom auf manuellen Betrieb.

11. Überprüfen Sie den manuellen Zoombetrieb. Durch Drehen des Zoomhebels kann vom Weitwinkel- in den Telebereich gefahren werden und umgekehrt.

12. Stellen Sie das Zoom auf automatischen Betrieb.

13. Richten Sie die Kamera auf Motive mit unterschiedlichen Helligkeitsniveaus und überprüfen Sie, ob die Blendenautomatik funktioniert.*

14. Stellen Sie die Blende auf manuellen Betrieb.

15. Drehen Sie den Blendenring und überprüfen Sie, ob sich die Blende ändert.

16. Drücken Sie die Sofort-Auto-Taste und halten Sie sie gedrückt, um kurz auf automatische Blendeneinstellung zu schalten. Richten Sie die Kamera auf Motive mit verschiedenen Helligkeitsniveaus, um die Einstellung zu überprüfen.

17. Stellen Sie die Blende auf automatischen Betrieb.

18. Stellen Sie den GAIN-Schalter auf 9, dann auf 18. Überprüfen Sie, ob die Blende jeweils um eine Stufe schließt und die GAIN UP-Anzeige im Sucher leuchtet.

19. Stellen Sie den GAIN-Wähler auf 0.

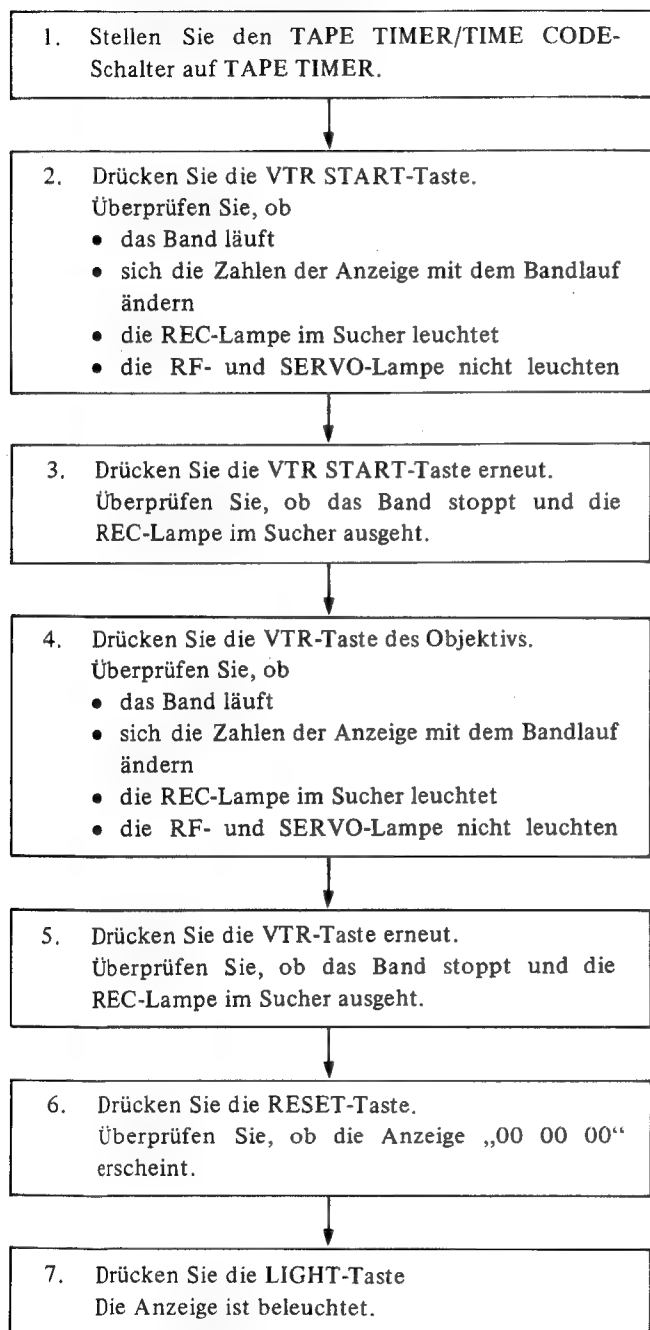
20. Stellen Sie den AUDIO/FILTER-Schalter auf AUDIO. Überprüfen Sie, daß die FILTER/AUDIO-Anzeige den Tonpegel anzeigt.

* Bei Verwendung eines Objektivs mit 6-poligen Anschluß können Regelschwingungen auftreten. Stellen Sie in diesem Fall den AUTO IRIS GAIN-Regler im Objektiv ein. (Genauere Informationen finden Sie in der Bedienungsanleitung des Objektivs.)

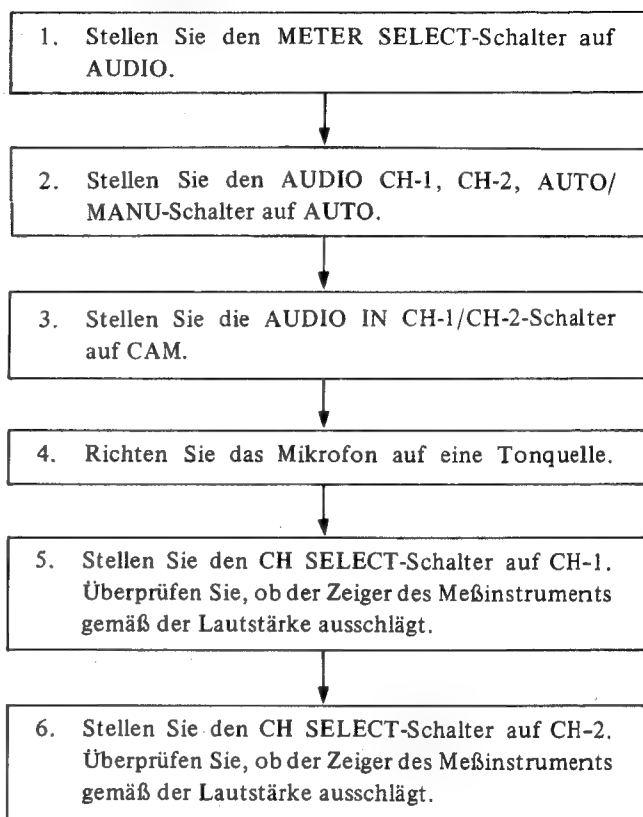
3. Überprüfen des Videorecorders

Führen Sie die Schritte 3-1. bis 3-5. der Reihe nach durch.

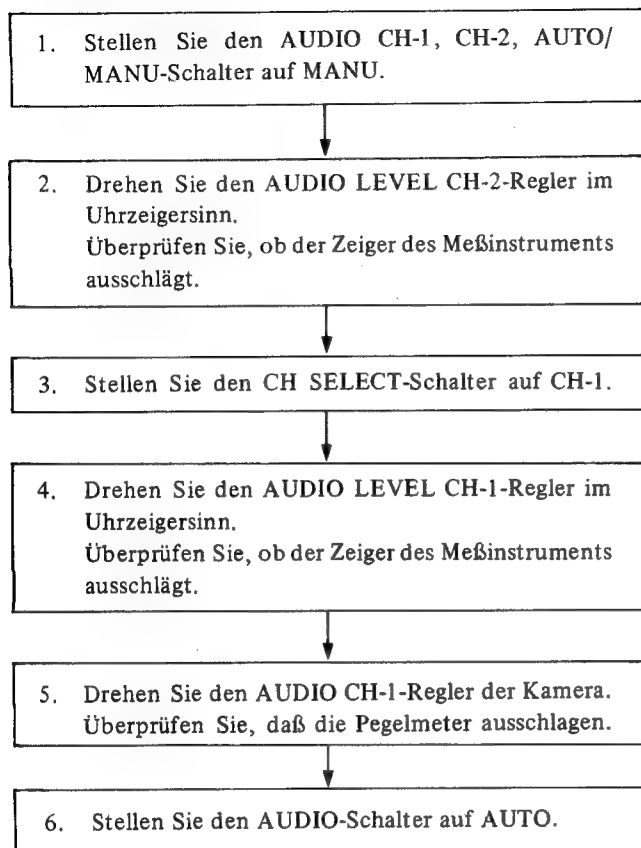
3-1. Überprüfen des Bandtransports



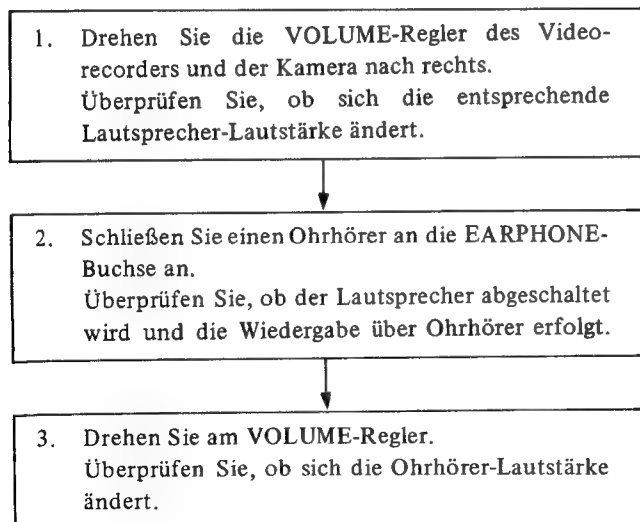
3-2. Überprüfen der automatischen Einstellung des Aufnahmepegels



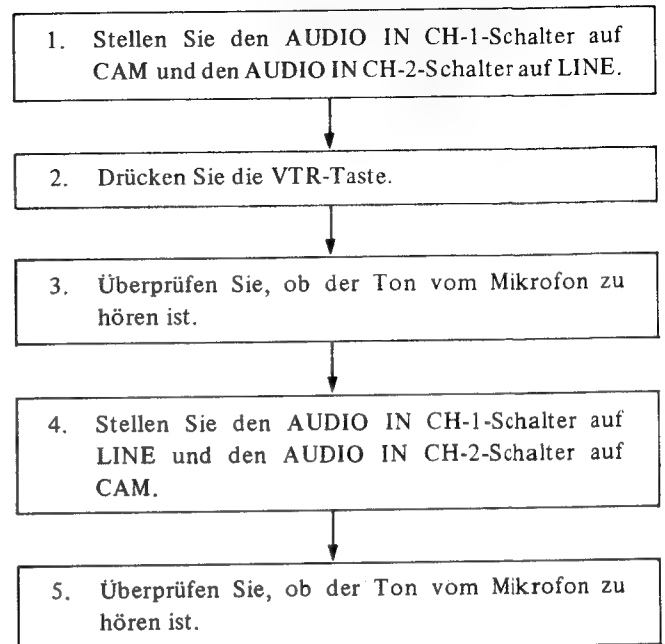
3-3. Überprüfen der manuellen Einstellung des Aufnahmepegels



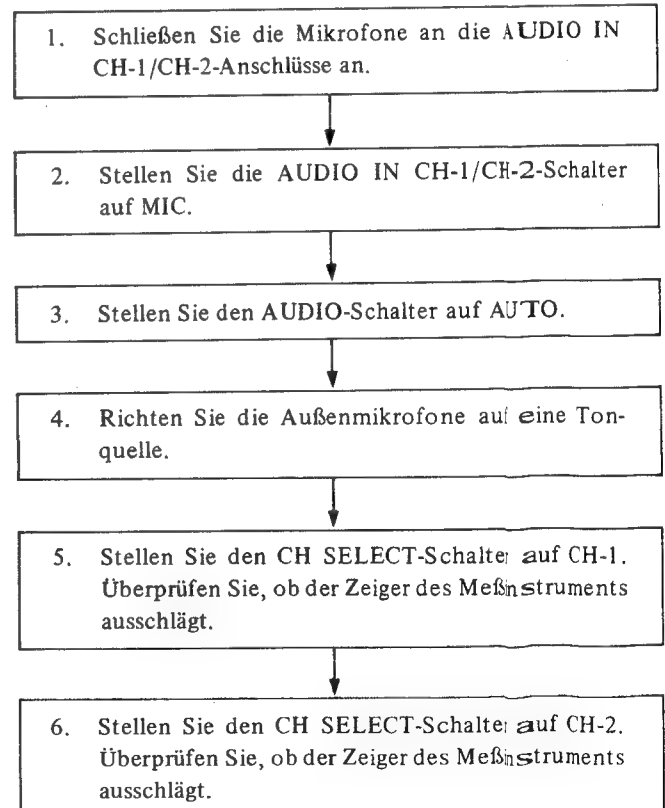
3-4. Überprüfen von Ohrhörer und Lautsprecher



3-5. Überprüfen der Ton-Hinterbandkontroll-Funktion



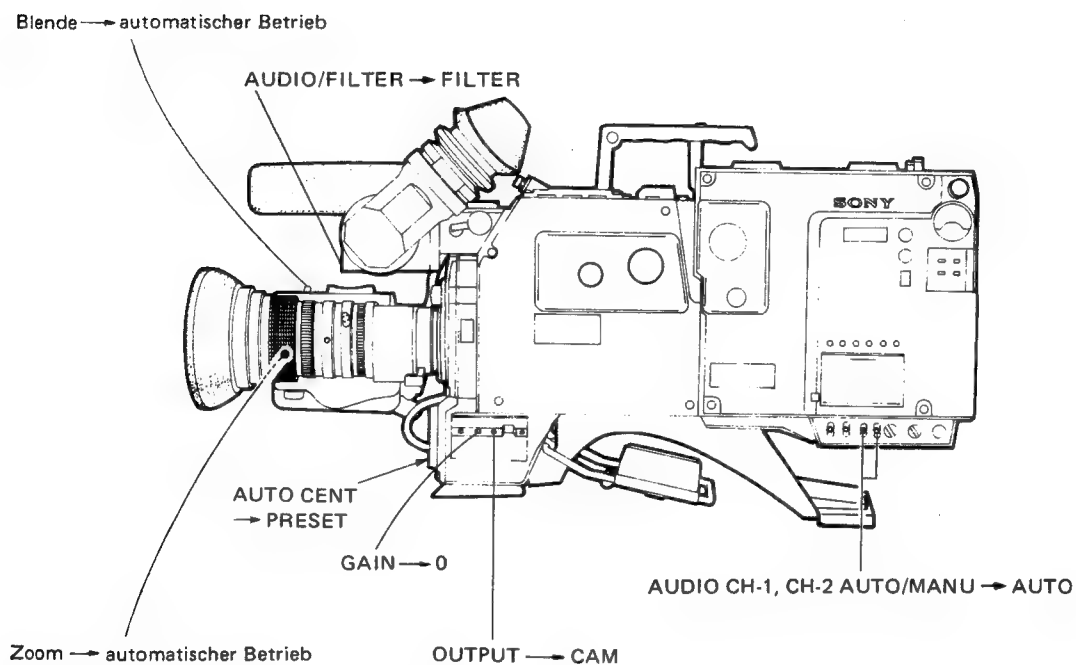
3-6. Überprüfen der Außenmikrofone



1-12-4. Bedienung

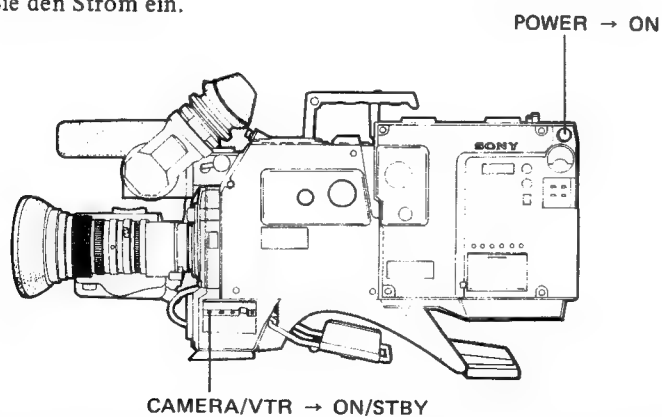
1. Vorbereitung

Überprüfen Sie vor Inbetriebnahme, daß die Schalter wie unten gezeigt eingestellt sind.



2. Aufnahme

1. Schalten Sie den Strom ein.



2. Setzen Sie eine Cassette ein.

3. Wählen Sie einen den Lichtverhältnissen entsprechenden Filter.

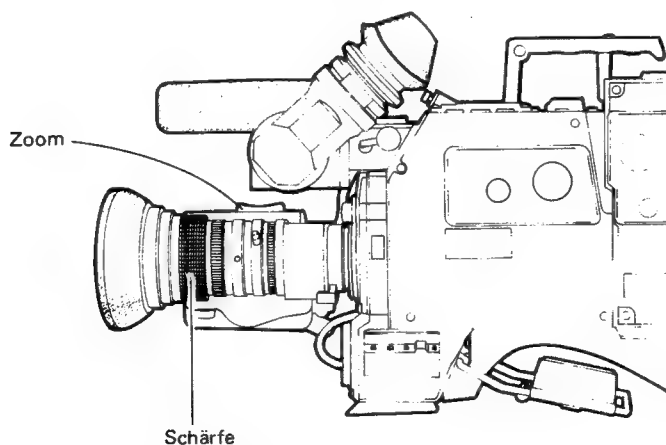
4. Stellen Sie den Weiß- und Schwarzabgleichwert ein.
Wenn der Weiß- und Schwarzabgleichwert gespeichert ist,
stellen Sie den WHITE BAL-Schalter auf AUTO.
**Wenn der Weiß- und Schwarzabgleichwert nicht gespeichert ist, Sie jedoch
schnell mit der Aufnahme beginnen wollen,**
stellen Sie den WHITE BAL-Schalter auf PRESET und den AUTO W/B
BAL-Schalter auf BLK. Sie erhalten dann einen Weiß- und Schwarzabgleich
für 3200°K.

Durchführung des Weiß- und Schwarzabgleichs

1. Stellen Sie den WHITE BAL-Schalter auf AUTO.
2. Zoomen Sie auf den weißen Gegenstand.
3. Stellen Sie den AUTO W/B BAL-Schalter auf BLK. Sobald die W/B
CENT-Anzeige aufleuchtet, ist der Schwarzabgleich durchgeführt.
4. Stellen Sie den AUTO W/B BAL-Schalter auf WHT, und prüfen Sie,
ob die W/B CENT-Anzeige aufleuchtet.

- Genauere Angaben zum Weiß- und Schwarzabgleich finden Sie im Abschnitt „1-6. Einstellungen“.

5. Richten Sie die Kamera auf das Motiv und stellen Sie Schärfe und Zoom ein.



SECTION 2

TECHNICAL INFORMATION

2-1. CIRCUIT BOARD DESCRIPTION

PA-37 board

It contains a set of preamplifiers which amplify the small signals from a set of pick-up tubes so as to process them in the succeeding stages. The front end of each preamplifier is located around the target of the respective pick-up tube so as to minimize degradation of performance due to stray capacitances.

It is also used to add the TEST SAW signal to the main channel signal.

VA-14 board

It receives the signals from the PA-37 board. Black-shading correction, amplification of 0 dB, 9 dB, or 18 dB, white-shading correction, and white balancing are performed on the VA-14 board.

It also contains the ABO circuit to optimize the beam of each pick-up tube in terms of incident light.

The G-channel signal, among the B-, G-, and R-channel signals from the VA-14 board, is applied to the IE-6 board, and the remaining B- and R-channel signals to the PR-75 board. It also contains the control to widen the dynamic range for AUTO KNEE (D.C.C.) correction.

IE-6P board

It generates the horizontal and vertical detail-signals out of the G-channel signal. The respective detail signal enhances the contour of an image and apparently improves resolution.

It also contains the horizontal and vertical GATE-PULSE generator for use in automatic centering, and the VF video output circuit.

PR-75 board

It contains the video signal processing circuits. The signal processing circuit mixes the detail-signal and masking signal with the B-, G-, and R-channel signals. It then performs flare correction to compensate for floating of the black level due to differences in the characteristics of the respective pick-up tubes, white clipping so as to clip the signals of greater than the threshold level in order to prevent the VTR against overmodulation, knee-point setting accomplished to apparently assure a dynamic range to some extent in white levels, and gamma-correction to compensate for the γ -characteristics of the CRT.

The knee point has two functions both the manual knee point (as ever usual) and auto knee point (new system). They are selected by switch in the PR-75 board. The auto knee point is called by D.C.C. (=Dynamic Contrast Control).

In addition, it also contains the NAM-Y signal output circuit for driving the automatic iris control, ABL signal generator for use in automatic black level adjustment, and B-, G-, and R-channel output circuits used for adjusting the camera.

EN-33A board

It contains the Y-signal, composite video signal, R-Y signal, and B-Y signal generators which can be operated by the B-, G-, and R-channel signals from the PR-75 board.

It also contains the color-bar signal generator.

One can select either the camera signal or the color-bar signal in accordance with the selector position.

DF-17 board

It contains a pair of deflection circuits for the respective pick-up tubes, where sawtooth wave signals necessary for beam deflection can be generated. The sawtooth wave signals are applied to the deflection electrodes of the respective pick-up tubes.

For use with the 3-tube camera, it contains the registration setting waveform generator for use in registration adjustment.

SH-8A board

It generates the shading correction signals when the sawtooth wave signals are fed from the DF-17 board. These correction signals are used to compensate for shading occurring in the lens system and pick-up tubes.

AT-16 board

It automatically accomplishes centering, white balancing, and black balancing for the camera, using a microcomputer. When the CCU is connected to the camera, it performs interfacing with the CCU so as to send the control signals from the CCU to the related circuit within the camera.

It also contains the driver for automatic iris control.

SG-63A board

It contains the synchronizing signal generator and GENLOCK circuit for synchronizing with the external sync.

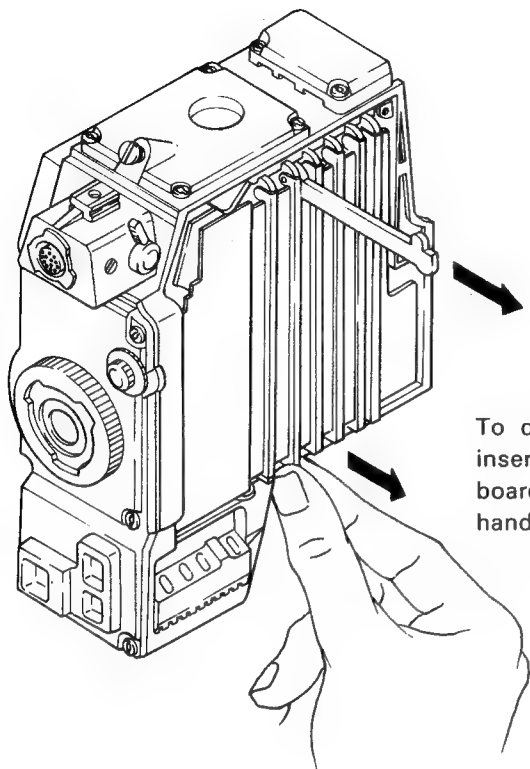
PW-93 board

It contains the switching voltage regulator, series voltage regulator, and DC-DC voltage converter.

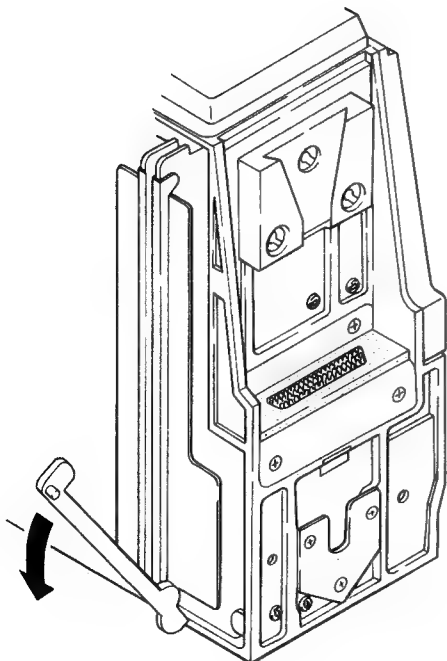
DC voltages are generated when a voltage of 12 volts DC is applied to the camera as power.

It also contains the electro-magnetic focusing current regulator for each pick-up tube.

2-2. CIRCUIT BOARD REMOVAL

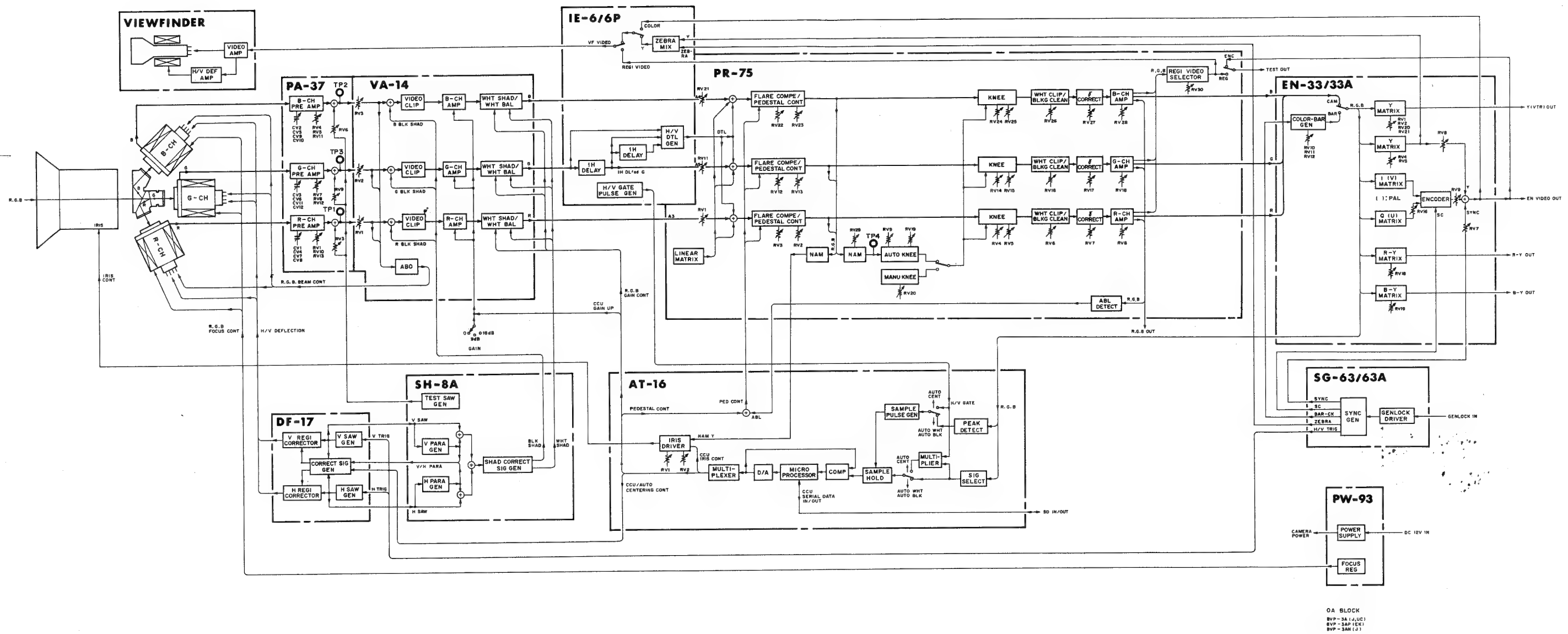


To disconnect the five boards, from VA to EN, insert the pin of the extractor into the hole of the board and pull them toward you with your another hand on the bottom of the board.



Hook the pin of the extractor on the bottom hole of the PW board and remove it in the direction indicated by the arrow, with the cabinet as a fulcrum.

2-3. OVERALL BLOCK DIAGRAM



2-4. VIDEO LEVEL CHECK SHEET

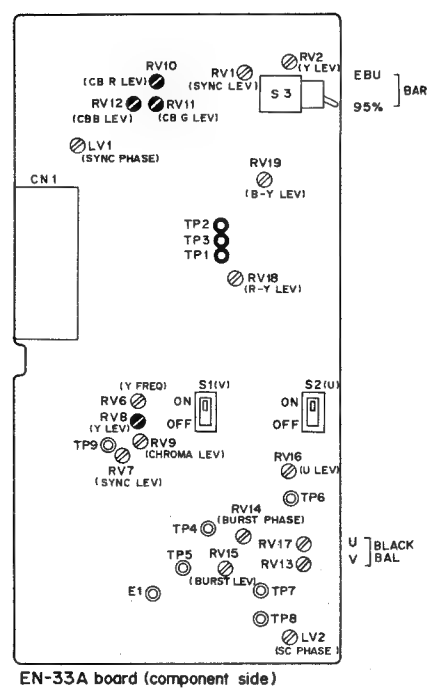
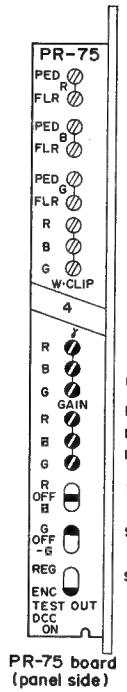
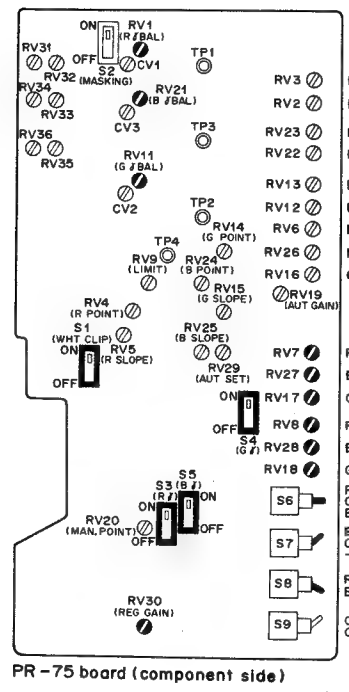
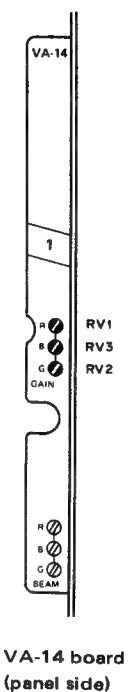
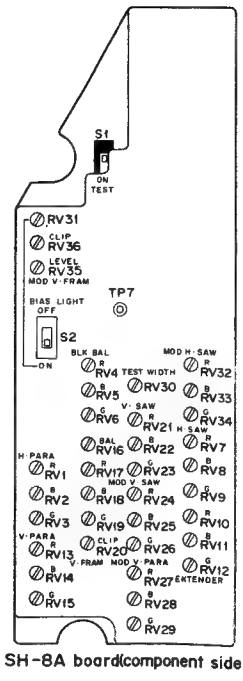
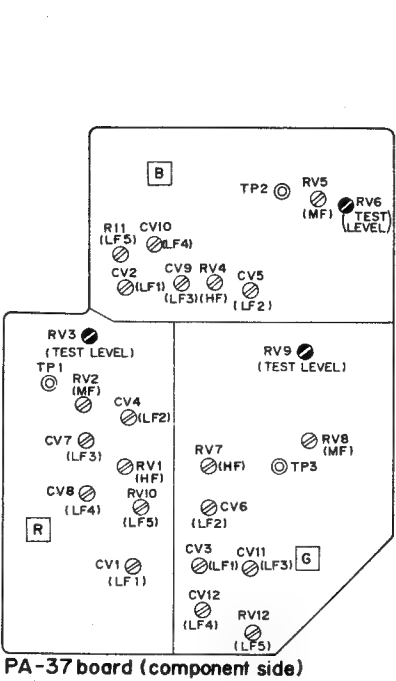
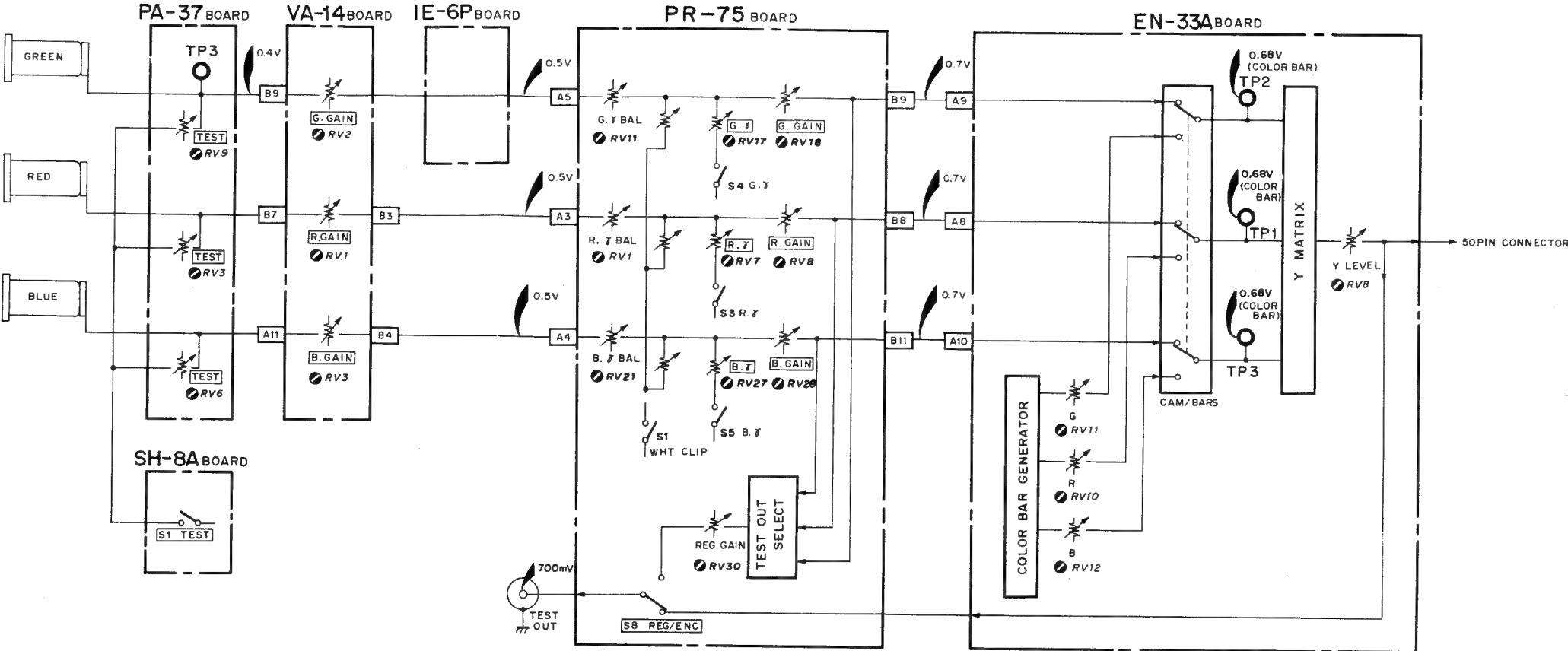
1. Preparations

S1	WHT CLIP	OFF	/PR-75 board
S3	R.γ	OFF	
S4	G.γ	OFF	
S5	B.γ	OFF	
S8	REG/ENC	ENC	
S7	G/-G	G	
S6	R/B	OFF	

Use the object at 3200°K.

2. Adjustments

- Adjust the iris control so that the video level at B9/VA-14 board is $0.4 \pm 0.01\text{Vp-p}$.
- Adjust the RV2 [G.GAIN]/VA-14 board so that the video level at A5/PR-75 board is $0.5 \pm 0.01\text{Vp-p}$.
- Adjust the RV1 [R.GAIN]/VA-14 board so that the video level at A3/PR-75 board is $0.5 \pm 0.01\text{Vp-p}$.
- Adjust the RV3 [B.GAIN]/VA-14 board so that the video level at A4/PR-75 board is $0.5 \pm 0.01\text{Vp-p}$.
- S1 [TEST]/SH-8A board → ON
- Adjust the RV9 [TEST]/PA-37 board so that the video level at A5/PR-75 board is $0.5 \pm 0.01\text{Vp-p}$.
- Adjust the RV3 [TEST]/PA-37 board so that the video level at A3/PR-75 board is $0.5 \pm 0.01\text{Vp-p}$.
- Adjust the RV6 [TEST]/PA-37 board so that the video level at A4/PR-75 board is $0.5 \pm 0.01\text{Vp-p}$.
- Adjust the RV11 (G.γ BAL)/PR-75 board for such a position that the white peak level at B9/PR-75 board does not change while setting S4 [G.γ]/PR-75 board at ON or OFF.
- Adjust the RV1 (R.γ BAL)/PR-75 board for such a position that the white peak level at B8/PR-75 board does not change while setting S3 [R.γ]/PR-75 board at ON or OFF.
- Adjust the RV21 (B.γ BAL)/PR-75 board for such a position that the white peak level at B11/PR-75 board does not change while setting S5 [B.γ]/PR-75 board at ON or OFF.
- S4 [G.γ], S3 [R.γ], and S5 [B.γ]/PR-75 board → ON
- Adjust the RV18 [G.GAIN]/PR-75 board so that the video level at B9/PR-75 board is $0.7 \pm 0.01\text{Vp-p}$.
- Adjust both RV8 [R.GAIN] and RV28 [B.GAIN]/PR-75 board so that the carrier leakage at the TEST OUT terminal is minimized.
- Adjust the RV8 (Y.LEVEL)/EN-33A board so that the video level at the TEST OUT terminal is $700 \pm 14\text{ mV}$.
- S8 [REG/ENC]/PR-75 board → REG
- Adjust the RV30/(REG GAIN)/PR-75 board so that the video level at the TEST OUT terminal is $700 \pm 14\text{ mV}$.



2-5. FUNCTION OF CONTROLS

VA-14

GAIN (R, G, B)
Adjusts so that R, G and B signals are equalized in level.

BEAM (R, G, B)
Adjusts the beam amount.

SH-8A

TEST
Turns on or off the test signal.

TEST WIDTH
Adjusts the pulsewidth of the test signal.

BIAS LIGHT
Turns on or off the bias light signal. When turned on, the brightness of the bias light can be changed using VR. When the iris is set at CLOSE, adjusts so that the output level of a pre-amplifier is 10 mV.

EXTENDER (R, G, B)
Adjusts using a lens with extender so that the color shading is minimized when an extender is used.

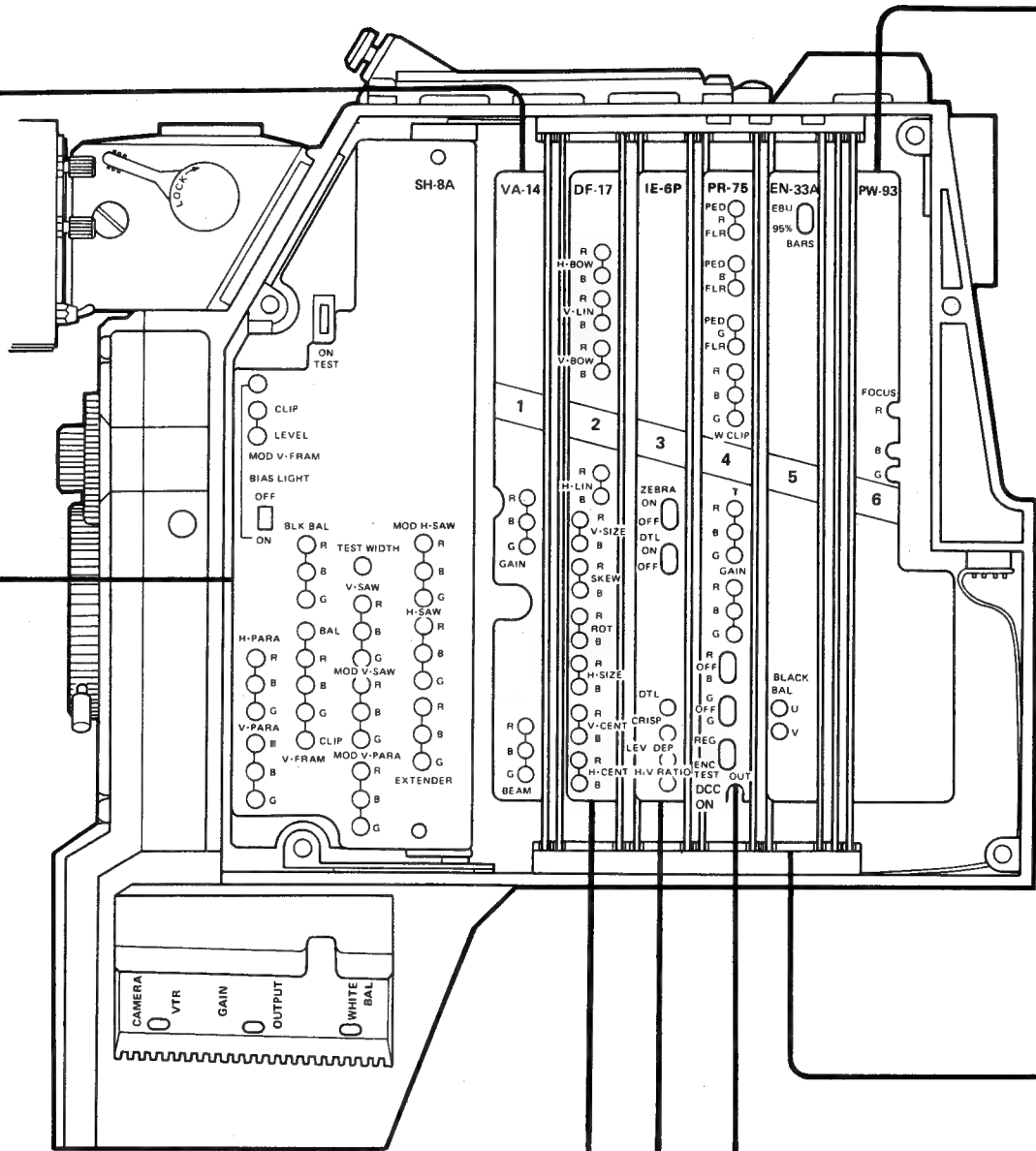
BLK BAL (R, G, B)
Adjusts so that no pedestal level changes when the gain switch is set at +9 dB or +18 dB.

H.PARA , **H.SAW**
V.PARA , **V.SAW**
Compensates the black level shading when the iris is set at CLOSE.

MOD H.SAW , **MOD V.SAW**
MOD V.PARA
Compensates the white level shading on the entire white pattern.

MOD V.FRAME (LEVEL, CLIP)
Reduces the vertical framing on the entire white pattern.

V.FRAME (BAL, R, G, B, CLIP)
Reduces the vertical framing when the iris is set at CLOSE.



PW-93

FOCUS (R, G, B)
Adjusts so that the amplitude in level of 5 MHz and 5 MHz on the multi-burst chart is maximized.

SG-63A (Rear side of camera)

H BLK WIDTH S3
Increases/decreases the horizontal blanking width by 70 nsec.

H PHASE RV7
Adjusts the phase of the camera video signal in the external synchronous mode.

EXT SC PHASE S1
Inverts the subcarrier phase of the camera video signal by 180° in the external synchronous mode.

EXT SC PHASE RV1
Adjusts the subcarrier phase of the output signal in the external synchronous mode.

INT SC PHASE RV2
Adjusts the subcarrier phase of the output signal in the internal synchronous mode. (Be sure not to turn RV2 except when adjustment is out of condition.)

CF S2
Turns on or off the color framing pulse.

CABLE COMPE S5
In the external synchronous mode, turns off the GEN LOCK signal for a connection cable under 150m and turns on the signal for one exceeding 150m.

EN-33A

BARS (EBU/95%)
Switches the color bar signal to the EBU specification or to "95%".

BLACK BAL (U, V)
Performs the black balance (carrier balance) adjustment of the composite video signal.

DF-17
Registration adjustment

H.BOW (R, B)	V.BOW (R, B)	V.SIZE (R, B)	H.SIZE (R, B)	V.CENT (R, B)
V.LIN (R, B)	H.LIN (R, B)	SKEW (R, B)	ROT (R, B)	H.CENT (R, B)

IE-6P

ZEBRA (ON/OFF)
Change over the zebra signal to ON or OFF. If the ZEBRA (ON/OFF) switch is being set to OFF, it inhibits switch ON or OFF from the viewfinder.

DTL (ON/OFF)
Changes over the detail signal to ON or OFF.

DTL
Adjusts the detail amount.

CRISP
Reduces the low-amplitude noise component in the detail signal.

LEV DEP
Sets so that the detail signal is not superimposed near the black level of a signal.

H/V RATIO
Adjusts the balance of the H and V of the detail signals.

PR-75

PED (R, G, B)
Adjusts the pedestal level of R, G and B signals. (Set at 20 mV.)

FLR (R, G, B)
Compensates the dispersion of the video signal due to the flare of R, G and B signals.

W.CLIP (R, G, B)
Sets the white clip level of R, G and B signals.

DCC (ON)
Change over the manual knee or the auto knee. This switch selects the manual knee and auto knee, when this switch set to ON, the machine functions as auto knee and knee point goes low.

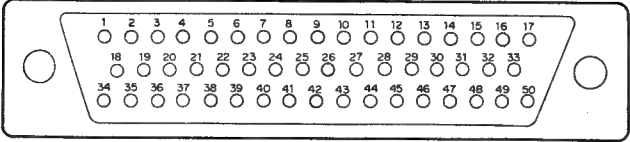
γ (R, G, B)
When a 11-step grayscale chart is shot so that the white level is 700 mV, sets the cross point of the waveform at 400 mV. Adjusts so that R, G and B signals are same in level.

GAIN (R, G, B)
Adjusts the video level of R, G and B signals.

TEST OUT (R/B, G/-G, REG/ENC)
Selects the signals necessary for registration adjustment.

2-6. CONNECTOR'S PIN FUNCTION

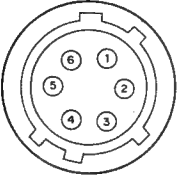
50PIN CONNECTOR



PIN NO.	SIGNAL	SPECIFICATION
1	GEN LOCK IN	VBS OR BS input for GEN LOCK $Z_i = 1\text{ k}\Omega$ 1 Vp-p
2	GEN LOCK(GND)	
3	+9V OUT	+9V output
4	−9V OUT	−9V output
5	UNREG(GND)	GND for +12V input
6	UNREG(GND)	
7	RED VIDEO OUT	Red signal output $Z_o = 75\Omega$ 0.7 Vp-p (No SYNC signal provided)
8	GRN VIDEO OUT	Green signal output $Z_o = 75\Omega$ 0.7 Vp-p (No SYNC signal provided)
9	BLU VIDEO OUT	Blue signal output $Z_o = 75\Omega$ 0.7 Vp-p (No SYNC signal provided)
10	RGB(GND)	GND for RGB signal
11	NC	Non connection
12	NC	
13	NC	
14	SD IN/OUT	Input/output of serial data for camera control
15	MIC(GND)	Microphone audio output $Z_o \geq 600\Omega$ −60 dBm balanced
16	MIC(X) OUT	
17	MIC(Y) OUT	
18	RET VIDEO IN	Return video input
19	RET VIDEO(GND)	
20	NC	Non connection
21	NC	
22	TAPE IND 1 IN	Tape remaining indicator signal input
23	TAPE IND 2 IN	
24	REC ALARM IN	Rec/tally signal input $Z_i = 20\text{ k}\Omega$
25	BATT IND IN	Residual battery alarm signal input $Z_i = 300\Omega$
26	PB REF IN	VF video selecting signal input $Z_i = 100\text{ k}\Omega$
27	VTR START/STOP OUT	VTR start/stop signal output
28	NC	Non connection
29	R−Y OUT	R−Y color difference signal output $Z_o = 75\Omega$ 0.7 Vp-p
30	R−Y(GND)	
31	NC	Non connection
32	VTR SAVE OUT	VTR save signal output SAVE: 4.5V STBY: 0V OR OPEN
33	AUDIO MONITOR IN	Audio signal input
34	SYNC OUT	SYNC pulse output \square 5 Vp-p
35	NC	Non connection
36	SHUT CLOSE IN	Shutter control signal input VTR REW: 4.5V
37	CF OUT	Color framing pulse output \square

PIN NO.	SIGNAL	SPECIFICATION
38	RET VIDEO CONT OUT	VF video selecting signal output PB: 0V
39	UNREG IN	Power supply input +12V
40	UNREG IN	
41	Y(VTR) OUT	Luminance signal output $Z_o = 75\Omega$ 1 Vp-p SYNC negative
42	Y(VTR) (GND)	
43	EN VIDEO(VTR) OUT	Composite video signal output $Z_o = 75\Omega$ 1 Vp-p SYNC negative
44	EN VIDEO(VTR) (GND)	
45	NC	Non connection
46	NC	
47	NC	
48	NC	
49	B−Y OUT	B−Y color difference signal output $Z_o = 75\Omega$ 0.7 Vp-p
50	B−Y(GND)	

REMOTE CONNECTOR (6PIN)



PIN NO	SIGNAL	SPECIFICATION
1	NC	Non connection
2	SD IN/OUT	Input/output of serial data for camera control
3	UNREG(GND)	GND for +12V input
4	GND	Signal grounding
5	EN VIDEO(VTR) OUT	Composite video signal output $Z_o = 75\Omega$ 1 Vp-p SYNC negative
6	UNREG OUT	Power supply output +12V

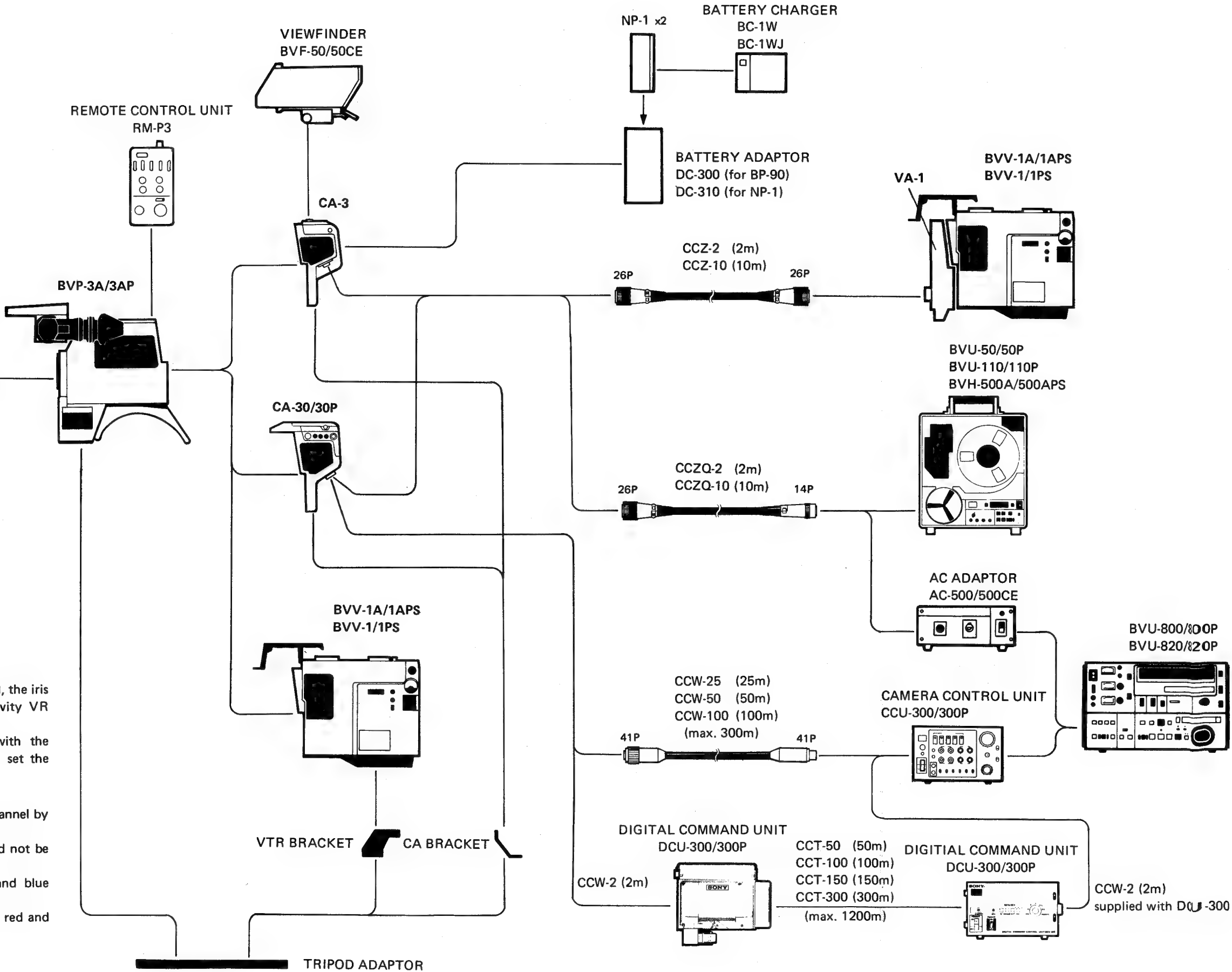
2-7. SYSTEM EXPANSION

ZOOM LENS

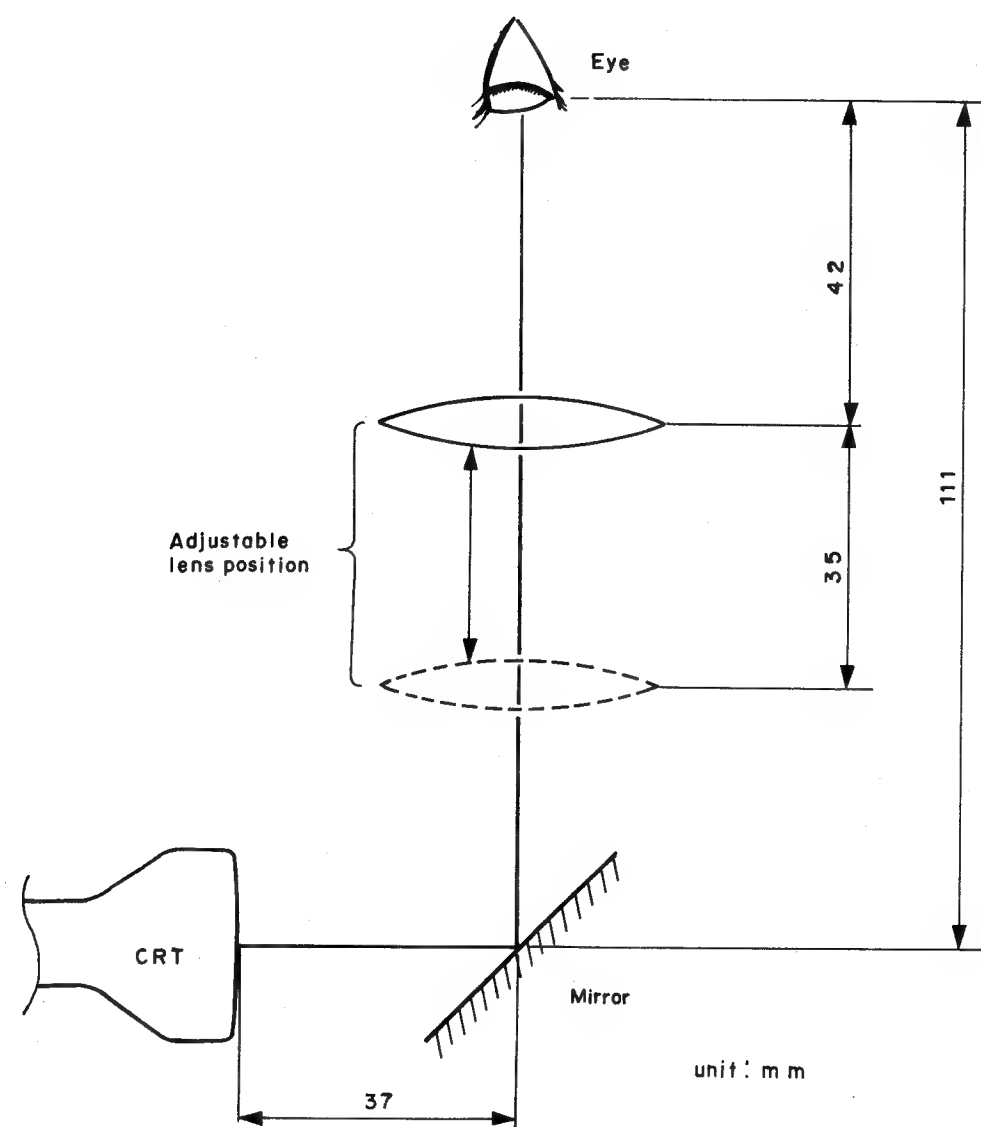
7x	A7x7B RM28	: FUJINON
12x	A12x9B ERM (with extender)	: FUJINON
13x	J13x9B4 IRS-2B (with extender)	: CANON
14x	A14x9B ERM28 (with extender)	: FUJINON
14x	A14x10B RM28	: FUJINON
15x	J15x9.5B4 KRS-B	: CANON

ADJUSTMENT FOR LENS REPLACEMENT

1. Iris Sensitivity Adjustment
- When the conventional 6-pin connector lens is used, the iris sensitivity should be adjusted using an iris sensitivity VR or gain VR attached to the lens grip.
- Adjustment: When light of 2,000 luxes enter with the AUTO/MANU switch set at AUTO, set the VR just prior to iris hunting.
2. Mechanical Back Focus Adjustment
- 1) Adjust Mechanical Back Focus in the green channel by using a lens adjusting lever.
(The pick-up tube in the green channel should not be shifted because of a reference level.)
 - 2) Adjust Mechanical Back Focus in the red and blue channels on the pick-up tube side.
 - 3) Adjust the horizontal and vertical sizes in the red and blue channels.



2-8. DIOPTRIC RANGE OF VIEWFINDER

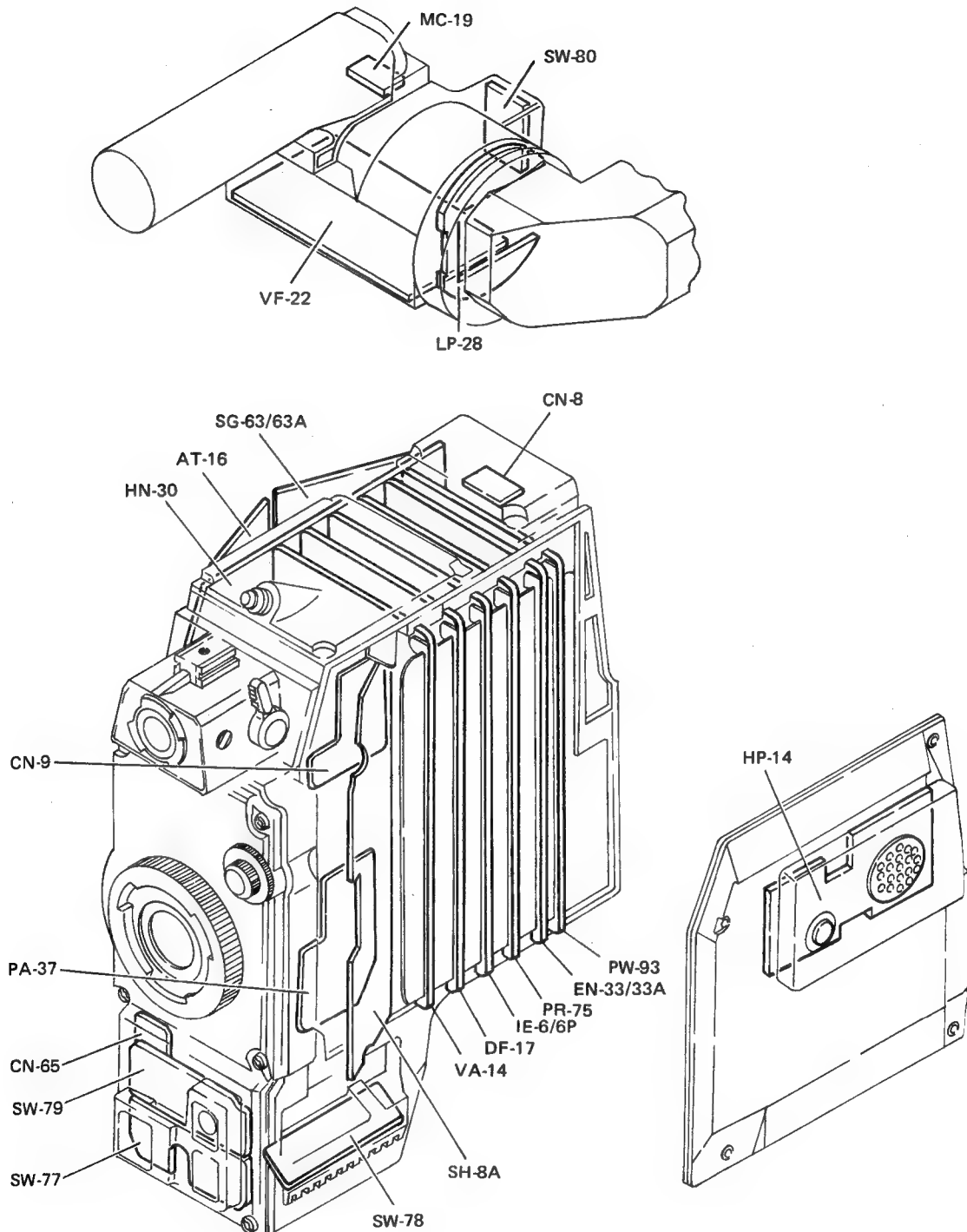


Diopter: $-1.5 \sim -4.5$ (Adjustable)

SECTION 3

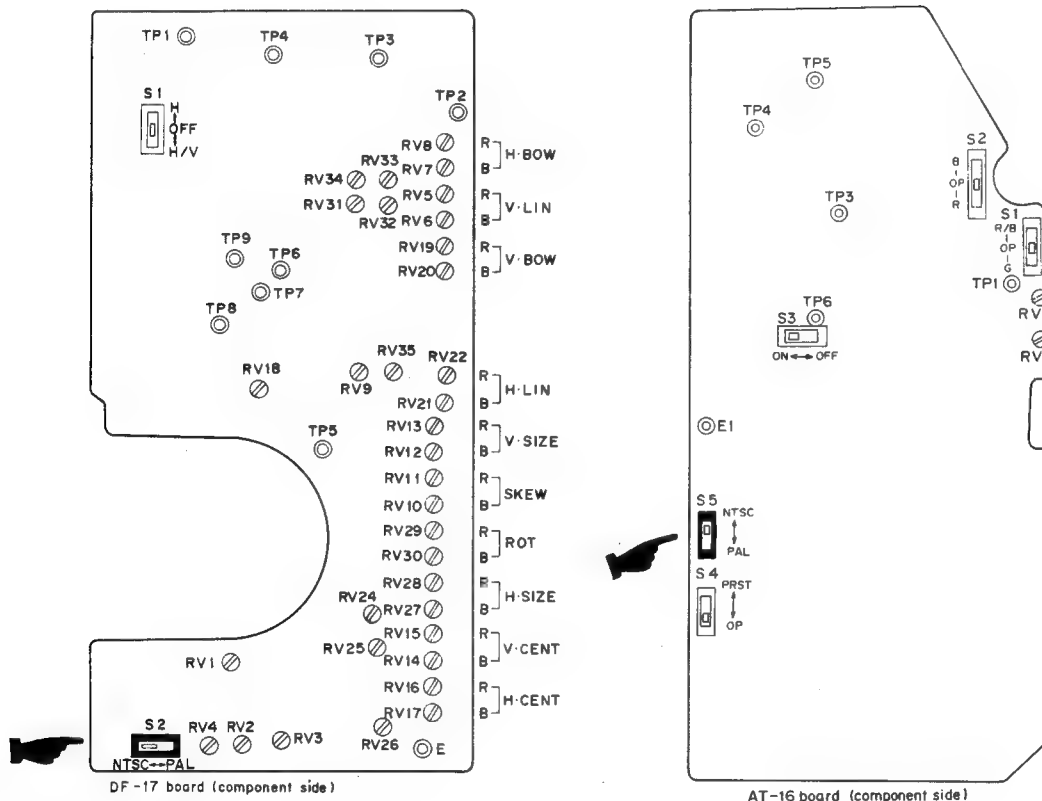
SERVICE INFORMATION

3-1. BOARD ARRANGEMENT



3-2. NOTES ON BOARD REPLACEMENT

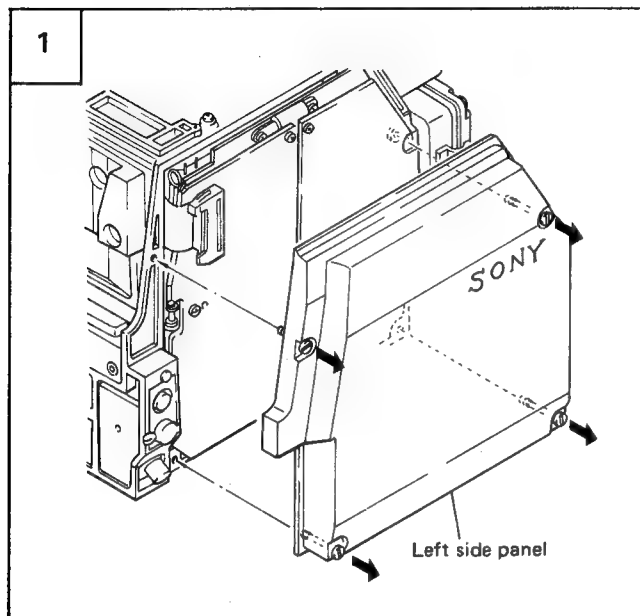
The DF-17 board and AT-16 board can be used in common for NTSC and PAL systems. The switching action of NTSC to PAL or PAL to NTSC is performed using the switches on the board. When used for the NTSC system, set S2 on the DF-17 board and S5 on the AT-16 board at the NTSC position as shown in the figure below. When used for the PAL system, set the switches at the PAL position.



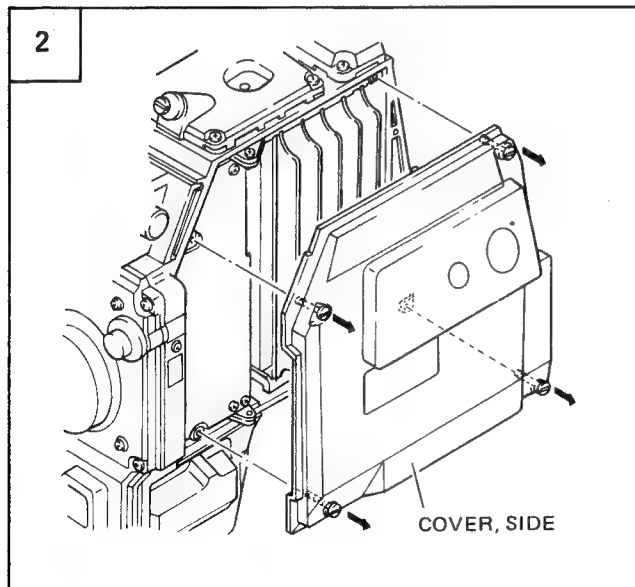
3-3. REPLACEMENT OF CAMERA TUBE

[REPLACEMENT OF RED TUBE]

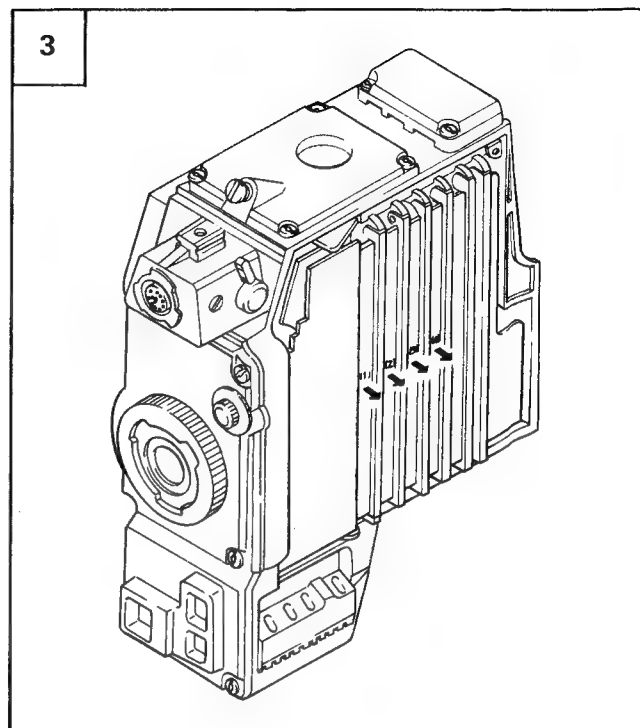
1. Loosen the four screws and remove the side cover.



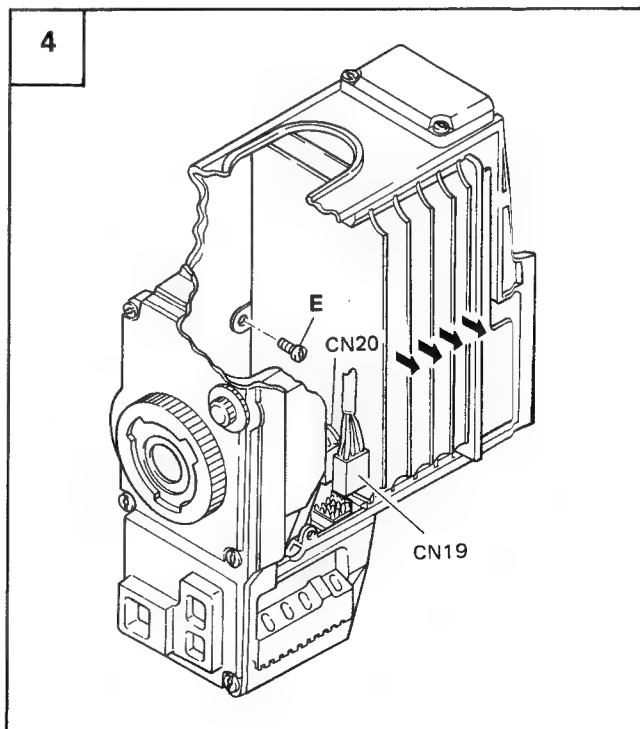
2. Loosen the four screws and remove the side cover.



3. Pull out the boards (1), (2), (3) and (4) by using a board extractor.

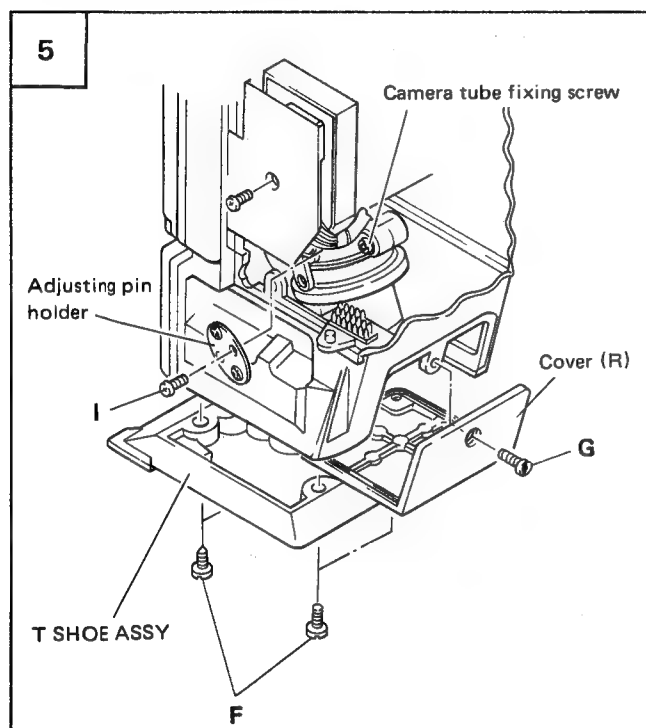


4. Remove the four screws E and pull out the four shield plates. Remove the connectors CN19 and CN20.

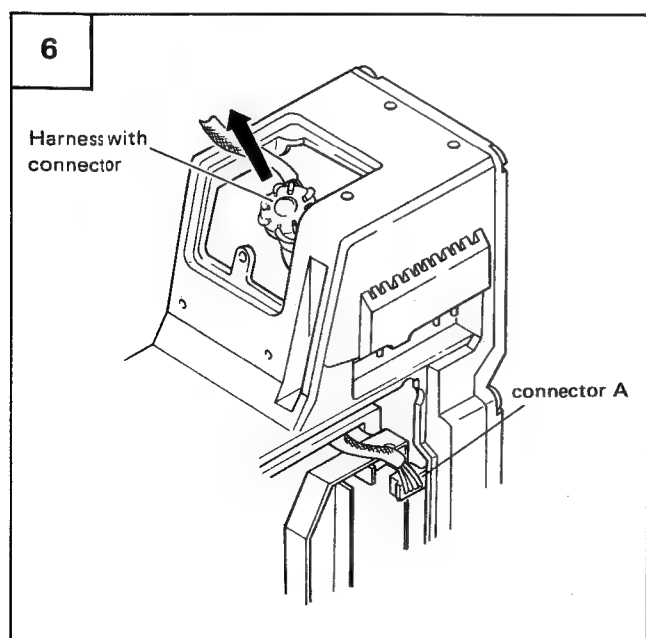


5. Remove the four screws F and remove the T-SHOE ASSY. Remove the three screws G to take out the cover (R). Remove the two screws I and take out the adjusting pin holder.

Loosen the camera tube fixing screw.

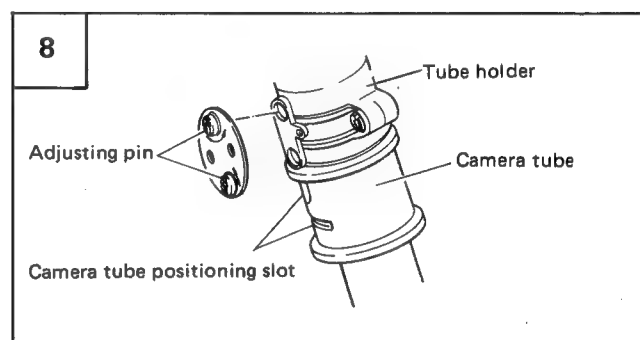


6. Remove the connector A from the PA board. Take out the camera tube from the tube holder. Remove the harness provided with connector from the camera tube.



7. Confirm that a new camera tube has its clear surface.

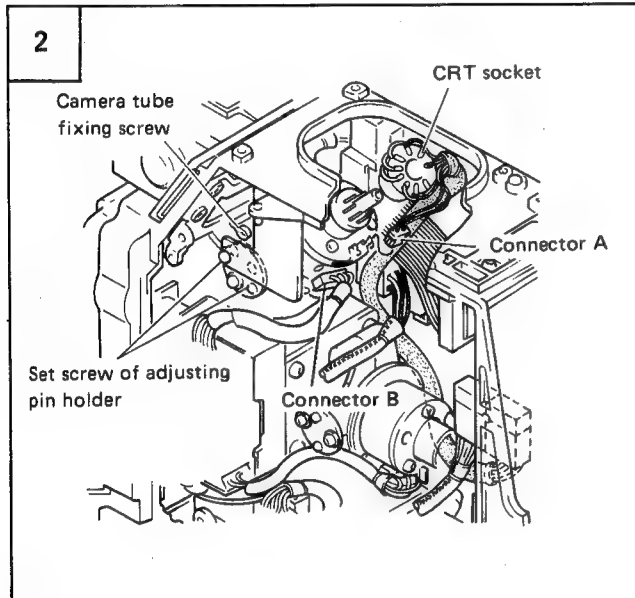
8. Insert a new replacement camera tube into the tube holder. At this time, insert it so that the camera tube positioning slot is located toward you. The positioning relation between the adjusting pin and camera tube positioning slot should be as shown in the figure.



9. When replacement of a RED tube is completed, perform the following section 4 items: RED Tube for Registration Adjustment and RED Tube for Adjustment of Video Signal System.

[REPLACEMENT OF BLUE TUBE]

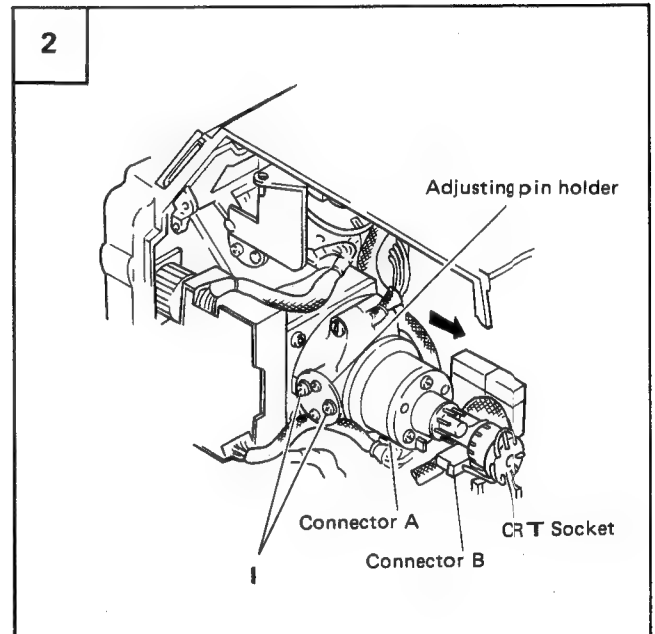
1. Perform Steps 1, 2, 3 and 4 in Replacement of RED tube.
2. Disconnect the CRT socket and the connectors A and B. Remove the two set screws of an adjusting pin holder to remove the pin holder. Loosen the camera tube fixing screw, and then take out the camera tube.



3. Confirm that a new camera tube has its clear surface.
4. Insert a new replacement camera tube into the tube holder. At this time, insert it so that the camera tube positioning slot is located toward you.
5. When replacement of a BLUE camera tube is completed, perform the following section 4 items: BLUE Tube for Registration Adjustment and BLUE Tube for Adjustment of Video Signal System.

[REPLACEMENT OF GREEN TUBE]

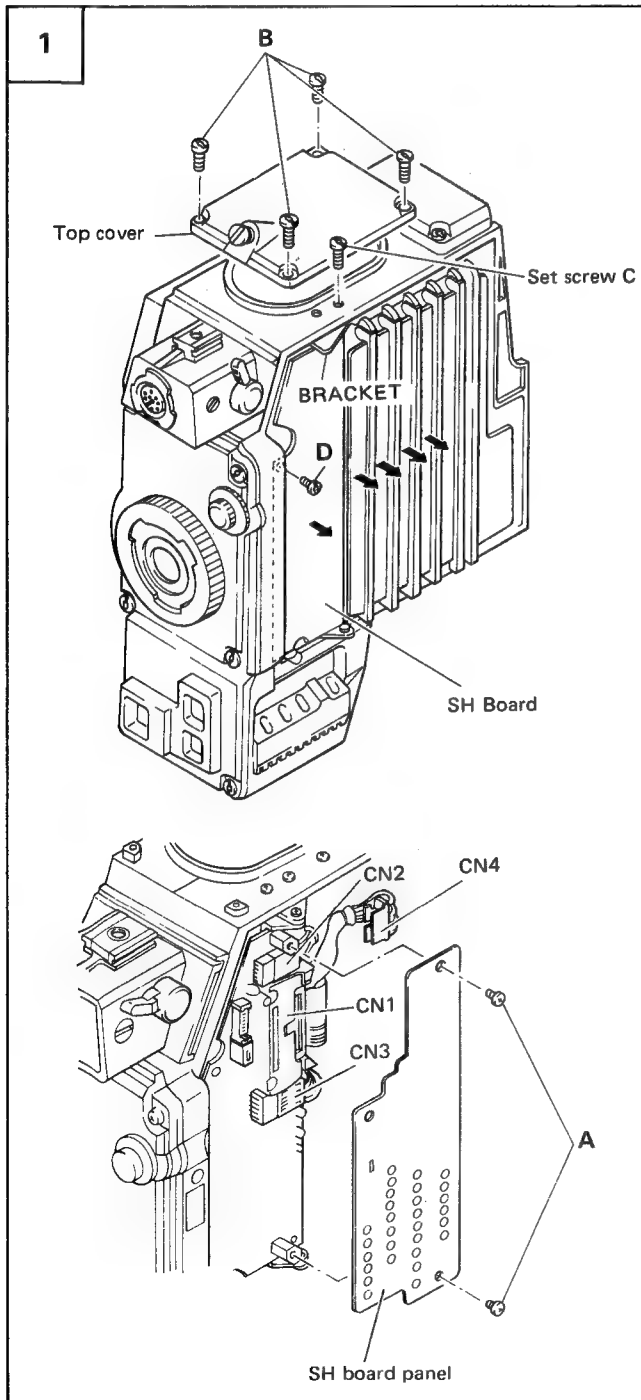
1. Perform Steps 1, 2, 3 and 4 in Replacement of RED tube.
2. Disconnect the CRT socket and the connectors A and B. Then, remove the two screws I and remove the adjusting pin holder to pull out the camera tube in the direction indicated by the arrow.



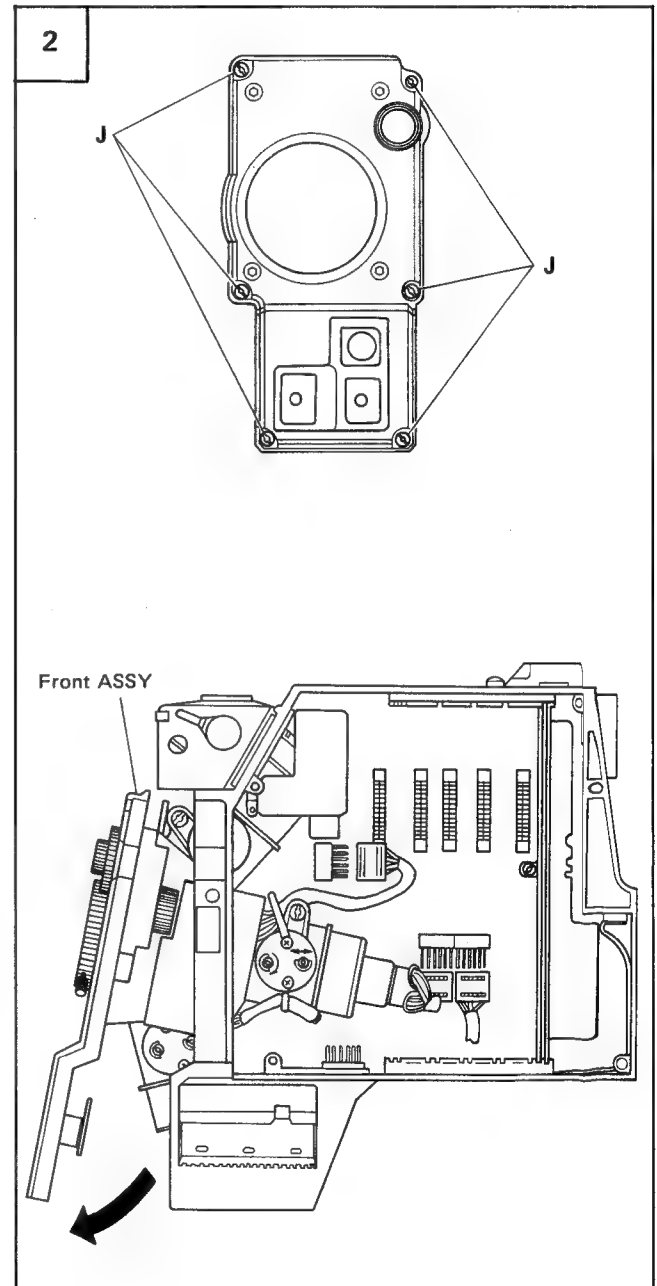
3. Confirm that a new camera tube has its clear surface.
4. Insert a new replacement camera tube into the tube holder. At this time, insert it so that the camera tube positioning slot is located toward you.
5. When assembling, be sure to pay attention to the harness position.
(Refer to the figure shown in Step 6 in Replacement of Shutter.)
6. When replacement of a GREEN camera tube is completed, perform the following section 4 items: Registration Adjustment and Adjustment of Video Signal System.

3-4. REPLACEMENT OF SHUTTER

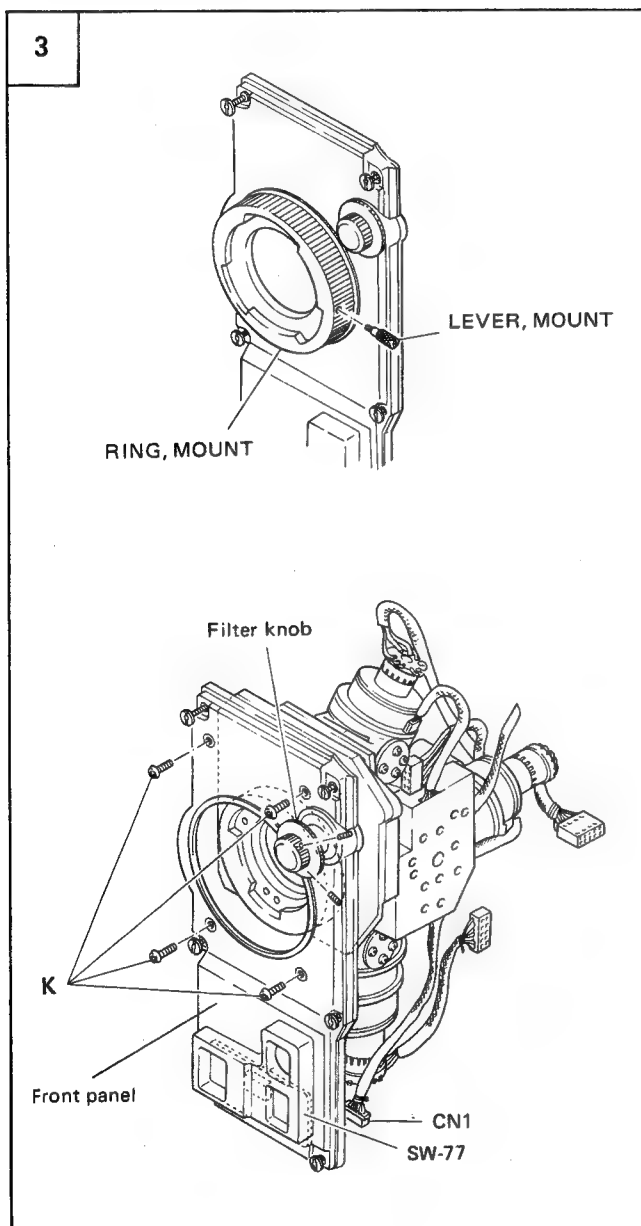
1. Remove the four screws B and remove the top cover. Remove the connector CN4 and two screws A on the SH board, remove the SH board panel, and then disconnect the connectors CN1, CN2 and CN3. Remove the two bracket set screws C and remove the SH board together with the bracket. Perform Steps 1, 2, 3 and 4 in Replacement of Red tube.



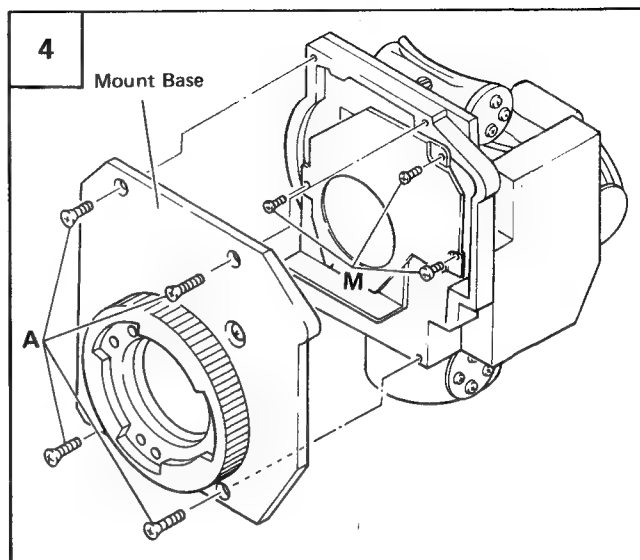
2. Remove the six front Assy fixing screws J. Pull out the lower part of the front Assy, and then remove the front Assy itself from the chassis. At that time, disconnect all the connectors from the front Assy, too.



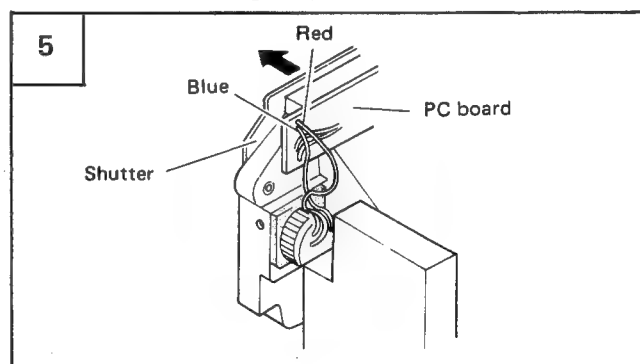
3. Remove the mount lever from the mount ring. Loosen the two set screws of a filter knob by using a L-shaped hexagonal wrench and remove the filter knob. Disconnect the connector CN1 on the SW-77 board, remove the four screws K by using a L-shaped hexagonal wrench (2.5), and then remove the front panel.



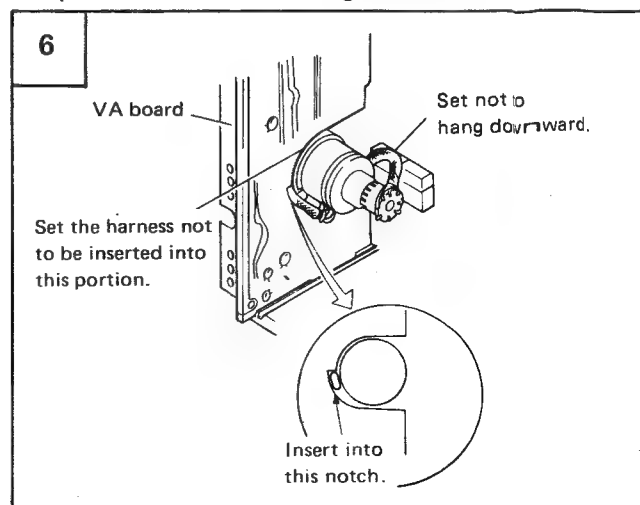
4. Remove the four screws A and remove the mount base from the optical block. Remove the three shutter fixing screws M.



5. Remove the red and blue lead wires from the printed circuit board by using a soldering iron. Pull out the shutter gently.

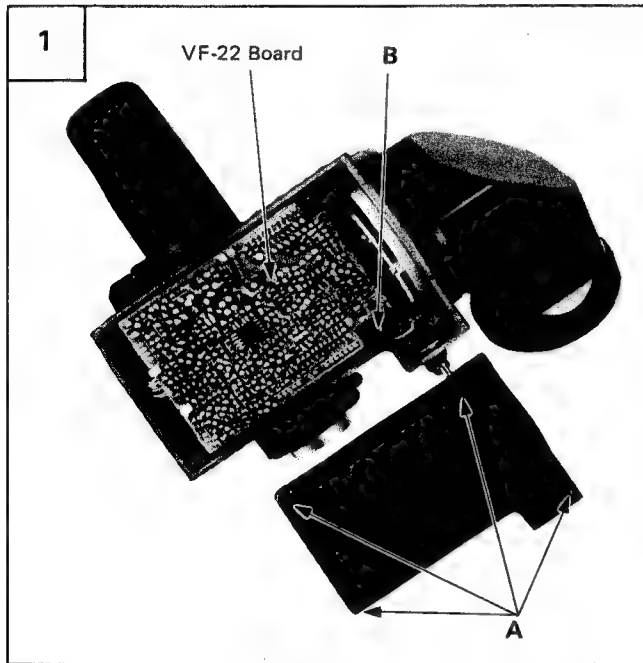


6. For replacement of a new shutter, attach in opposite procedures to disassembly. When assembling, be sure to pay attention to the harness position as shown in figure below.

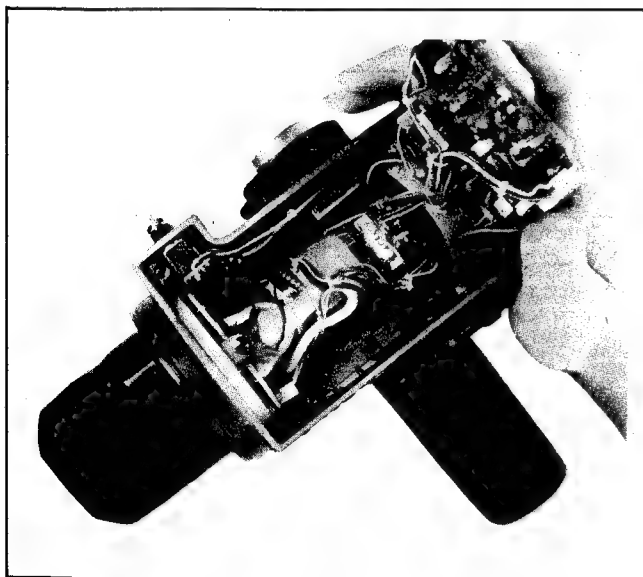


3-5. REPLACEMENT OF CRT

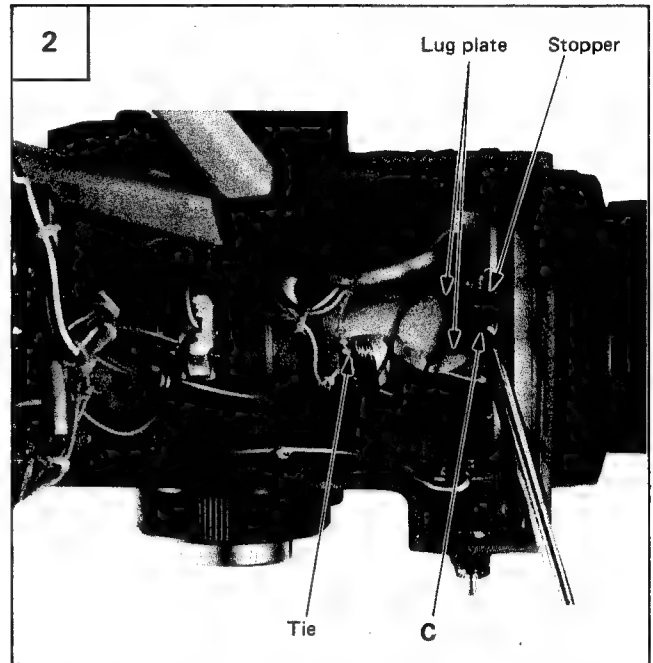
1. Remove the 4 rear cover screws (A) and take off the cover. Next, remove a fixing screw (B) of the VF-22 Board and remove the Board.



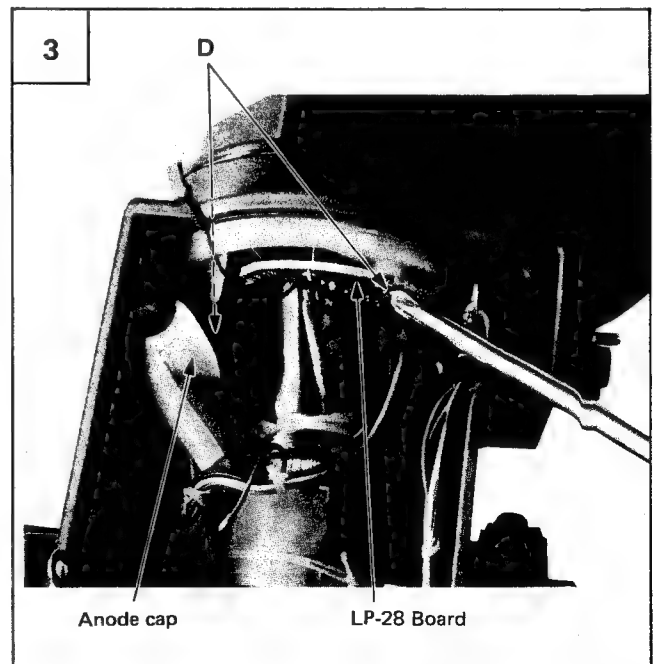
Note: Remember the arrangement of the harness in the viewfinder. When you assemble the viewfinder after replacement of CRT, you should arrange the harness of viewfinder to prevent a damage of harness at the original position as shown below.



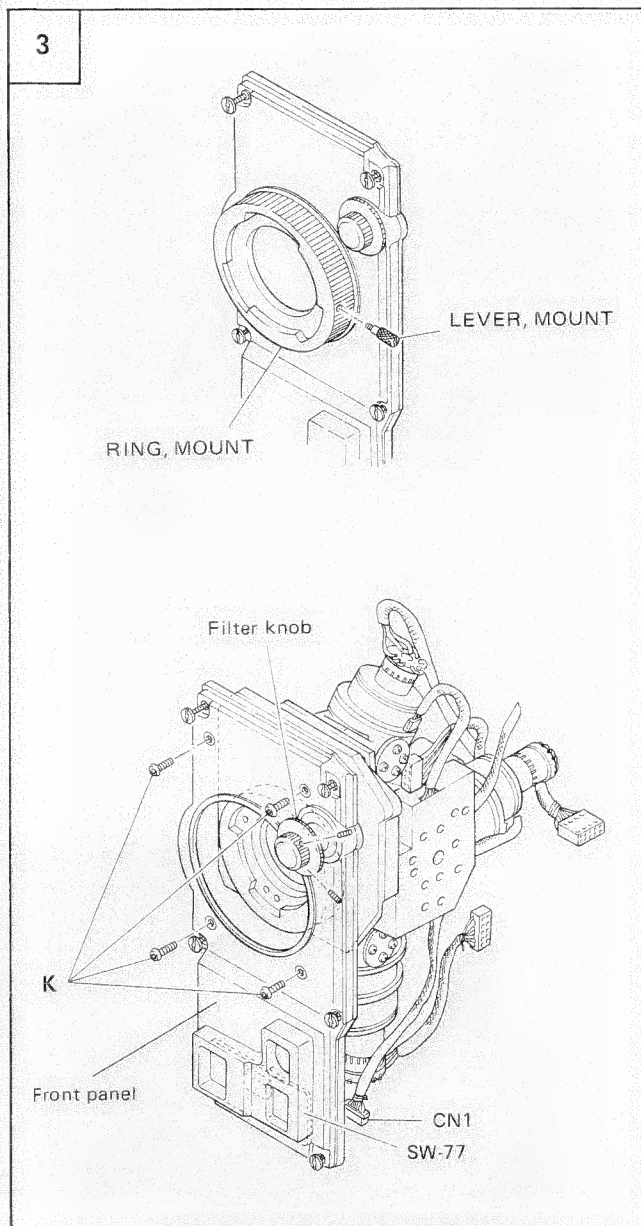
2. Turn the VF Tube so that the anode cap of CRT is upward. Remove the screw (C) and take off the stopper and 2 lug plates. Cut a tie.



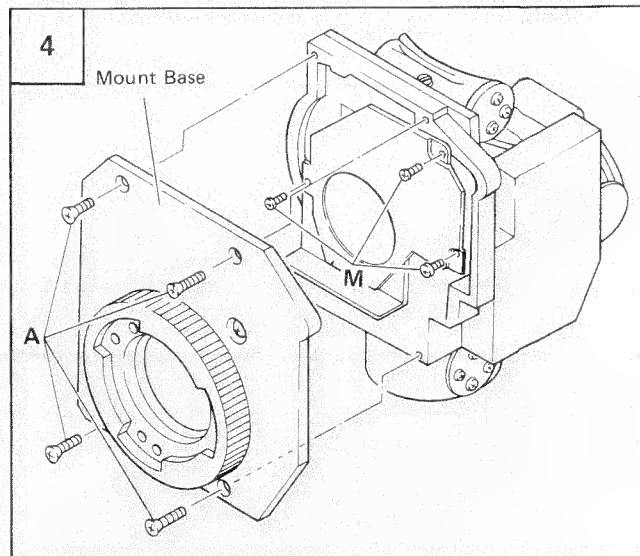
3. Remove the anode cap from the CRT. Remove the 2 fixing screws (D) and take off the LP-28 board.



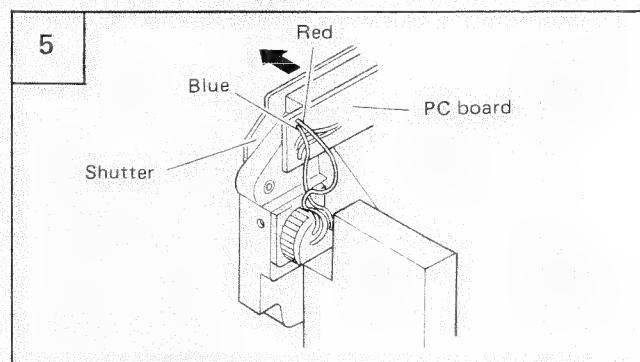
3. Remove the mount lever from the mount ring. Loosen the two set screws of a filter knob by using a L-shaped hexagonal wrench and remove the filter knob. Disconnect the connector CN1 on the SW-77 board, remove the four screws K by using a L-shaped hexagonal wrench (2.5), and then remove the front panel.



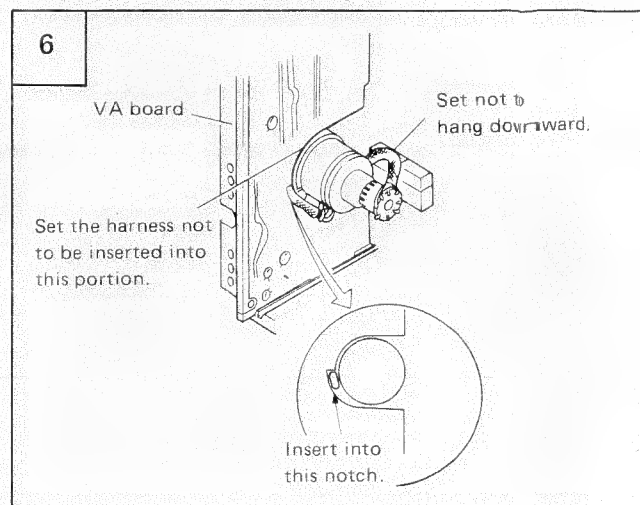
4. Remove the four screws A and remove the mount base from the optical block. Remove the three shutter fixing screws M.



5. Remove the red and blue lead wires from the printed circuit board by using a soldering iron. Pull out the shutter gently.

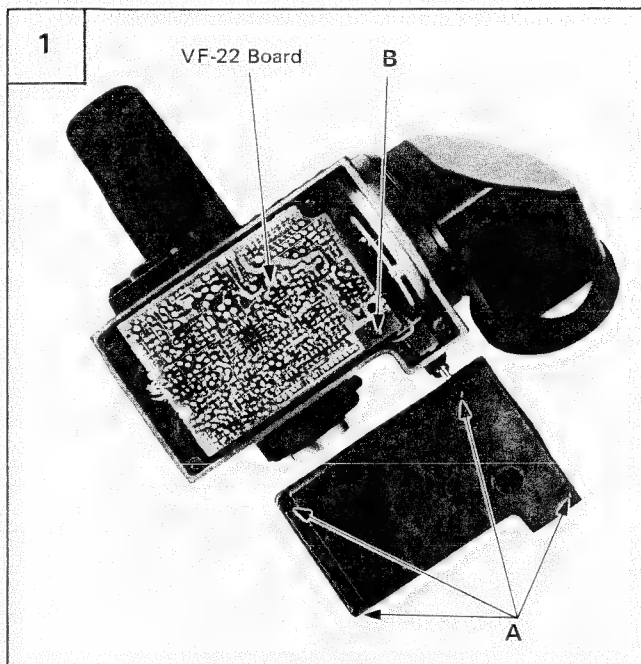


6. For replacement of a new shutter, attach in opposite procedures to disassembly. When assembling, be sure to pay attention to the harness position as shown in figure below.



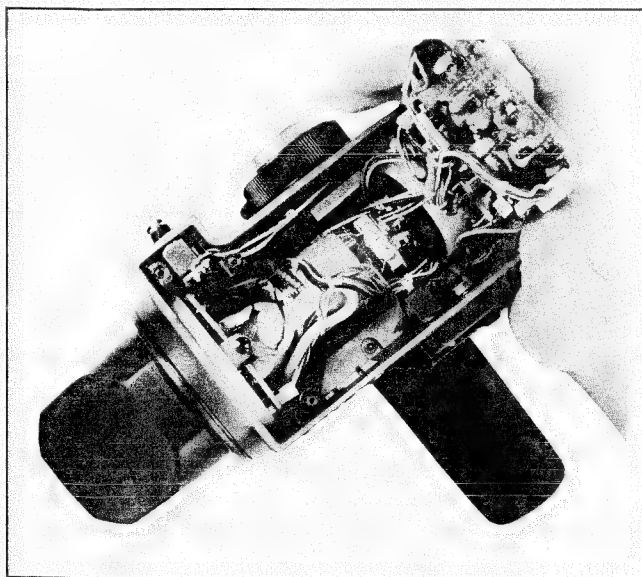
3-5. REPLACEMENT OF CRT

1. Remove the 4 rear cover screws (A) and take off the cover. Next, remove a fixing screw (B) of the VF-22 Board and remove the Board.

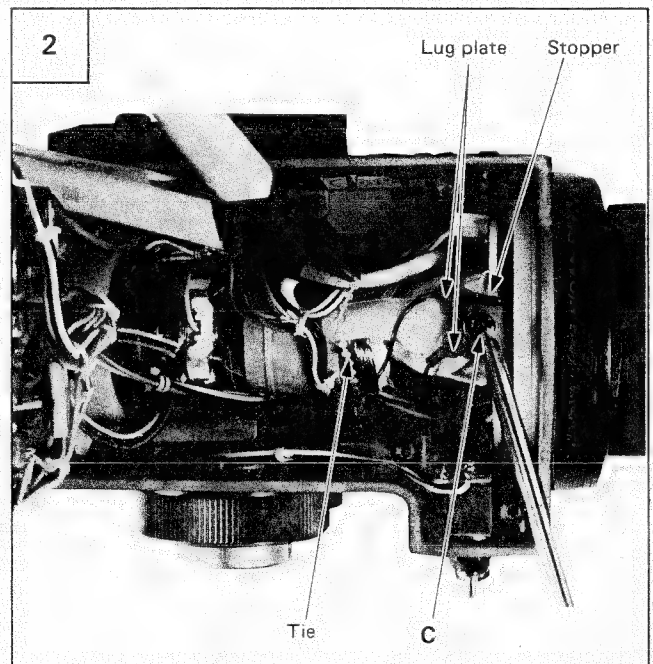


Note: Remember the arrangement of the harness in the viewfinder.

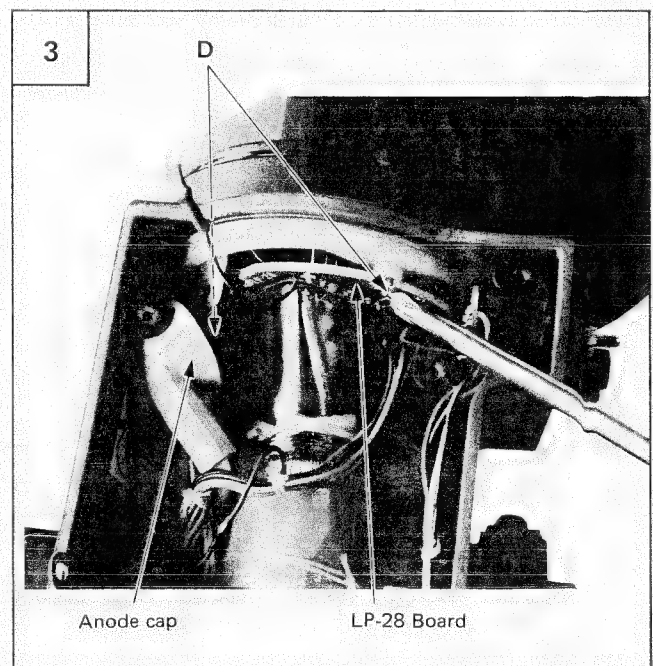
When you assemble the viewfinder after replacement of CRT, you should arrange the harness of viewfinder to prevent a damage of harness at the original position as shown below.



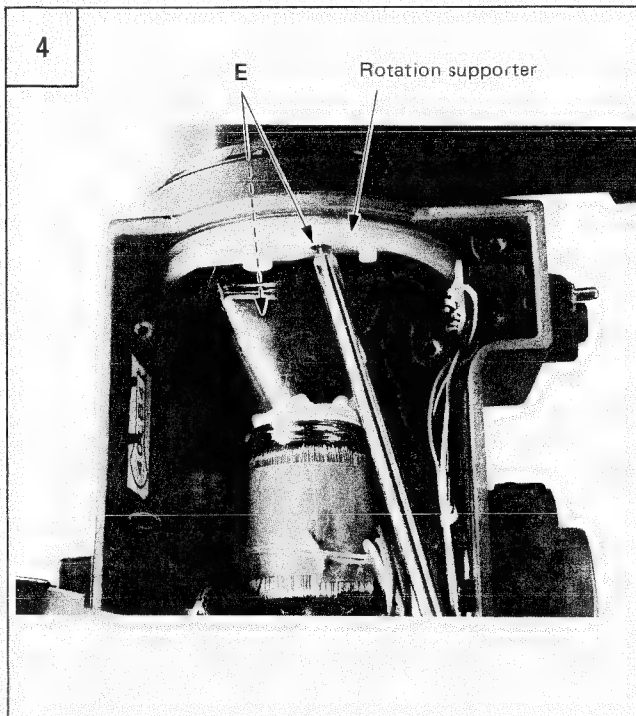
2. Turn the VF Tube so that the anode cap of CRT is upward. Remove the screw (C) and take off the stopper and 2 lug plates. Cut a tie.



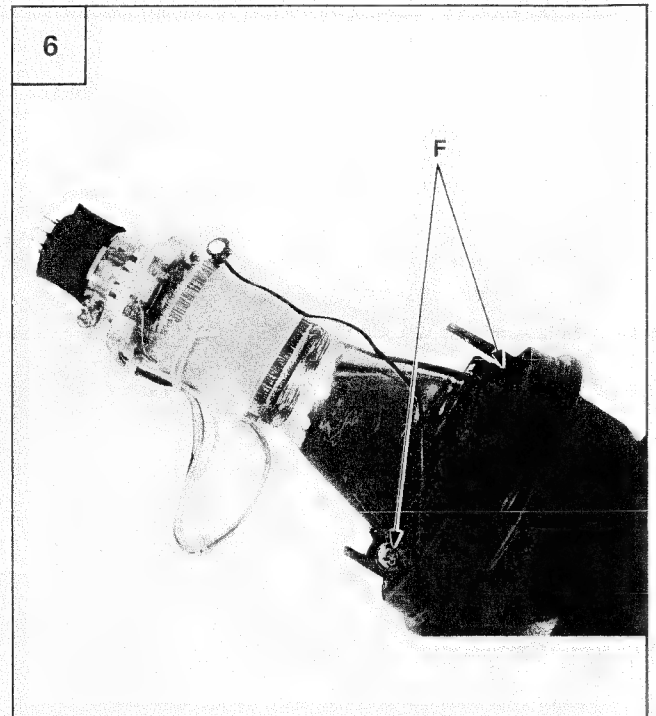
3. Remove the anode cap from the CRT. Remove the 2 fixing screws (D) and take off the LP-28 board.



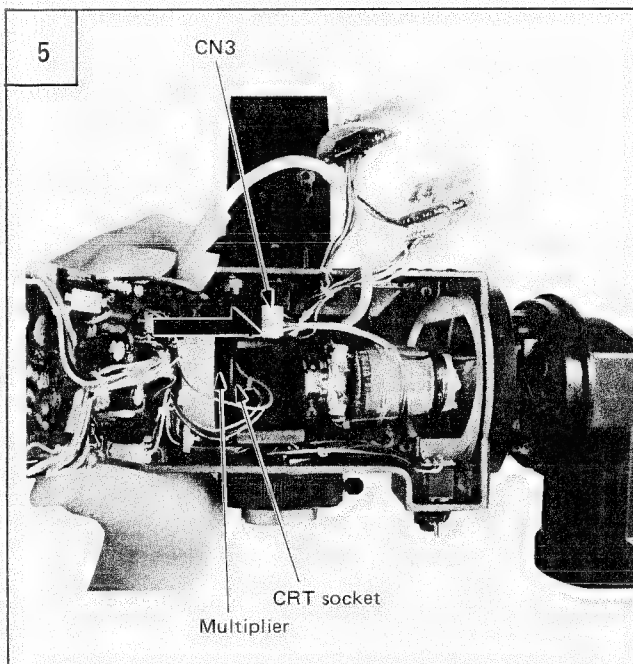
4. Remove the 2 fixing screws (E) and take off the rotation supporter.



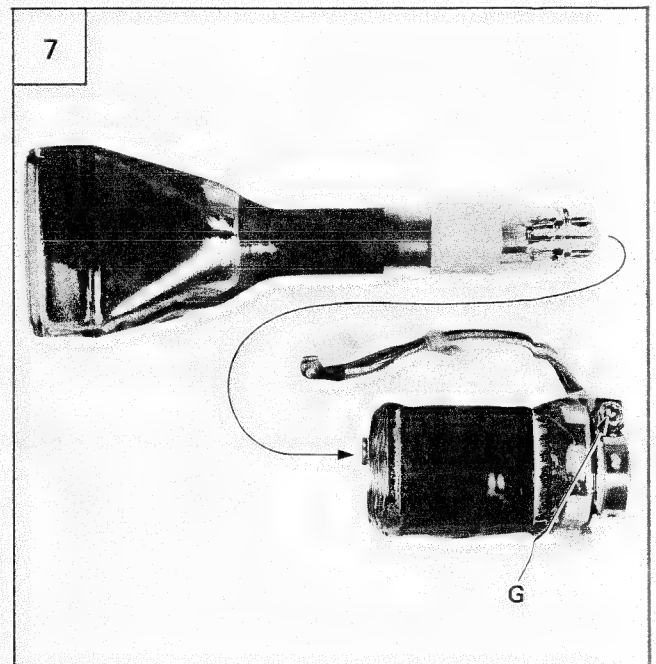
6. Loosen the 2 CRT retaining screws (F) and remove the CRT from the VF Tube.



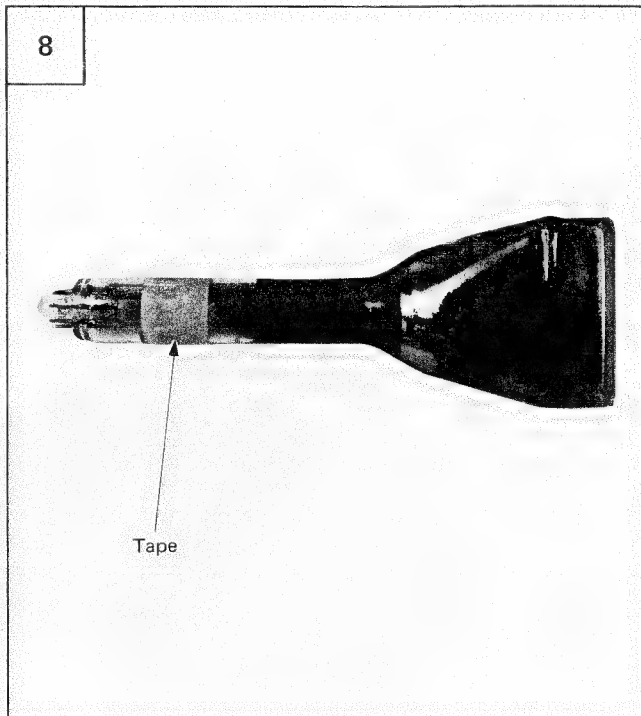
5. Pull the CRT out of the multiplier, and remove the CRT socket from the CRT. Disconnect the CN3 of VF-22 board.



7. Loosen the Deflection Yoke retaining screw (G) and remove the Deflection Yoke from the CRT.

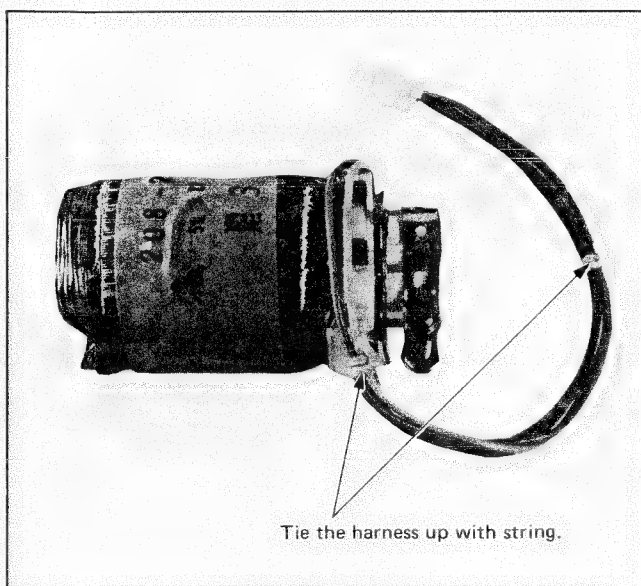


8. Tape around the neck of new CRT where the Deflection Yoke is to be attached, with a mending tape.



9. Assemble the viewfinder by reversing the steps.

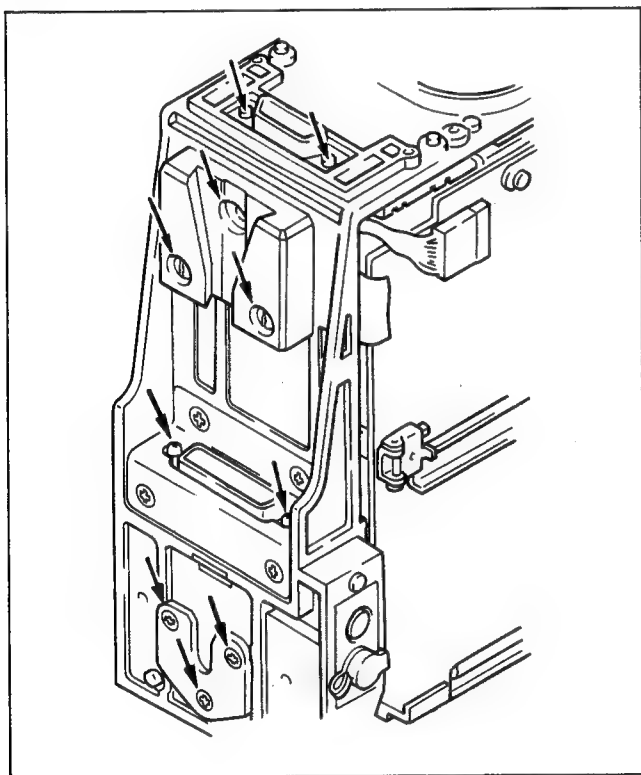
Note: If you replace a Deflection Yoke, please reform the new Deflection Yoke as shown below before replacement.



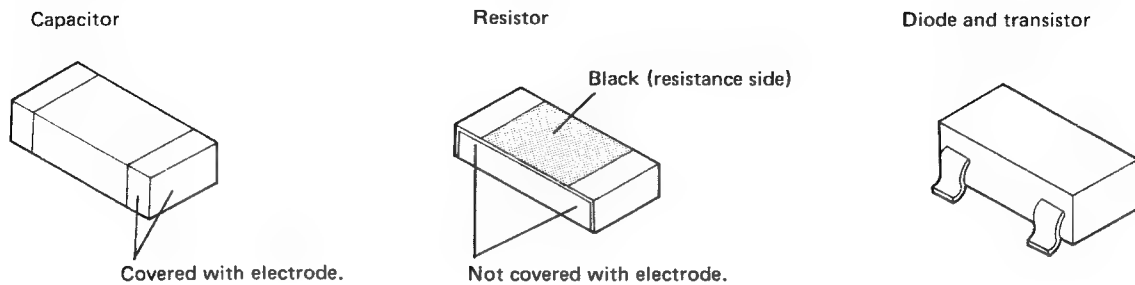
3-6. PRECAUTIONS ON REPLACEMENT OF VTR CONNECTOR (50-PIN CONNECTOR)

The VTR connector (50-pin connector) is attached using a high-precision special tool (CV positioning) so as to keep the accurate positioning relation with VTR mount (C shoe) and to dock with any of BVV-1/1A or BVV-1PS/1APS. Therefore, be sure not to loosen or remove the ten fixing screws shown in the figure below.

For replacement of the VTR connector (50-pin connector), contact your Sony dealer.



3-7. REPLACEMENT OF CHIP PARTS



Tools required:

Soldering iron of approx. 20W

(Use a temperature controller, if possible, which can control the iron temperature to $270 \pm 10^\circ\text{C}$.)

Braided wire (SOLDER TAUL)

Solder (A solder of 0.6 mm in diameter is recommended.)

Tweezers

Soldering conditions:

Iron temperature of $270 \pm 10^\circ\text{C}$

A connector should be soldered within 2 seconds.

Procedures

1. To remove a resistor or capacitor, place the tip of a soldering iron on chip parts to heat the parts, and then move it horizontally for removal while being desoldered. For removal of a diode or transistor, heat the one side, with two pins, of chip parts at the same time, set the parts up when desoldered, and remove the two pins. And then, remove the pin on another side.
2. Absorb solder by using a braided wire to smooth the land surface of board after removal.
3. Confirm by visual check that no pattern of the removed chip parts is peeled off and no adjacent parts is damaged or bridged.
4. Perform a thin pretinning on the pattern.
5. Place new chip parts on the pattern to solder its both sides.

The chip parts removed should not be used again.

For details, refer to CHIP COMPONENTS MANUAL, Sony's parts No. 9-972-289-01 prepared by Sony Corporation.

SECTION 4 ALIGNMENT

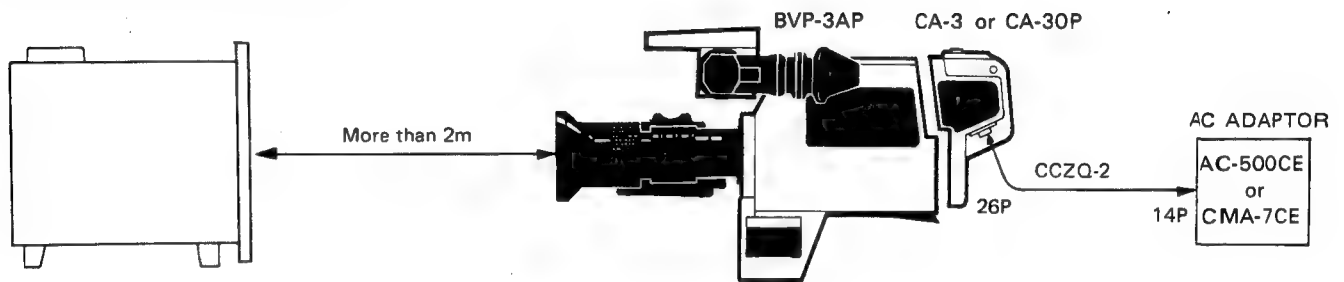
4-1. PREPARATION

4-1-1. Equipment Required

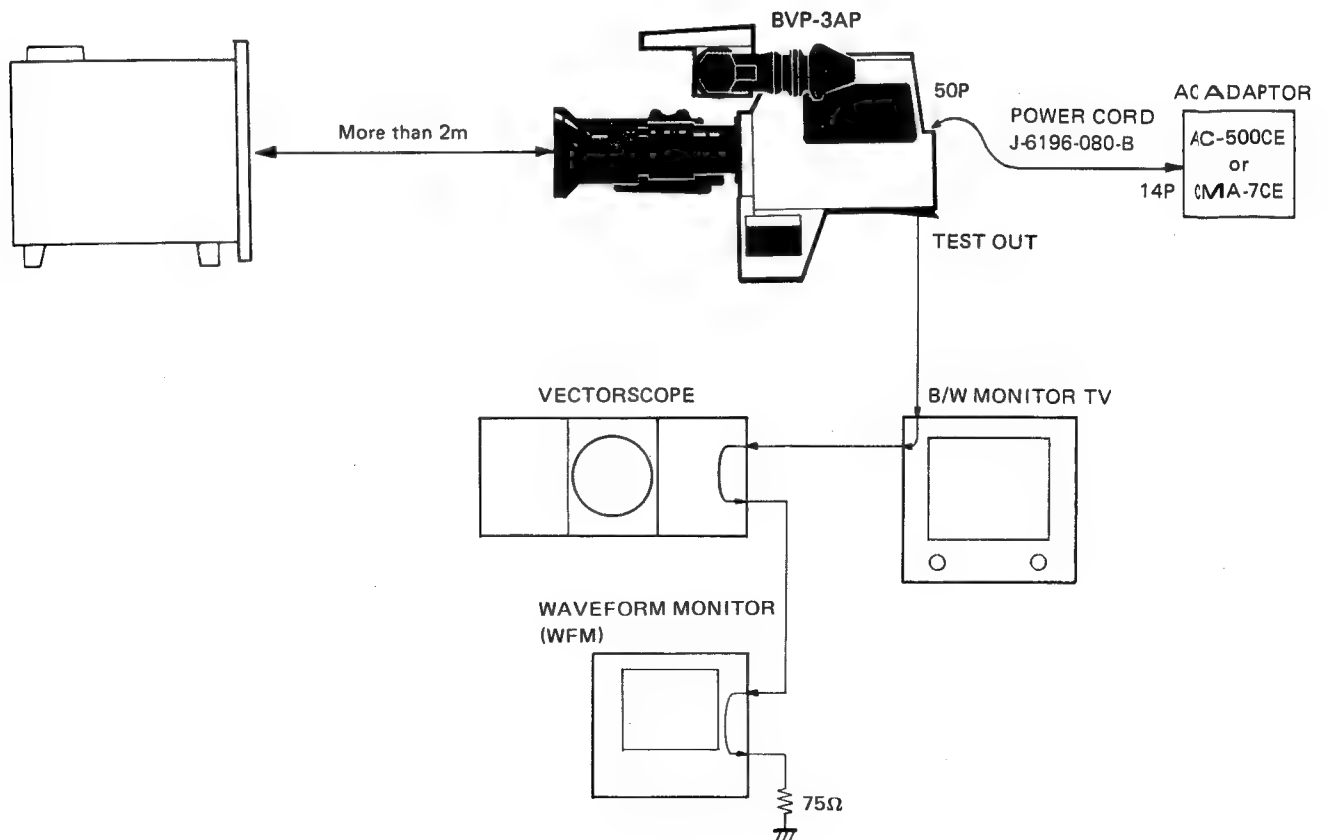
- Oscilloscope
- Waveform Monitor (WFM)
- Vectorscope
- B/W Monitor (H resolution: more than 700 TV lines)
- Test Signal Generator (Cross-hatching signal can be output.)
- Frequency Counter
- Digital Voltmeter
- CF Pulse Generator (Sony BVG-10P)
- AC Adaptor (Sony AC-500CE or CMA-7CE)
- Camera Adaptor (Sony CA-3 or CA-30P)

4-1-2. Connection

When CA-3 or CA-30P is used:

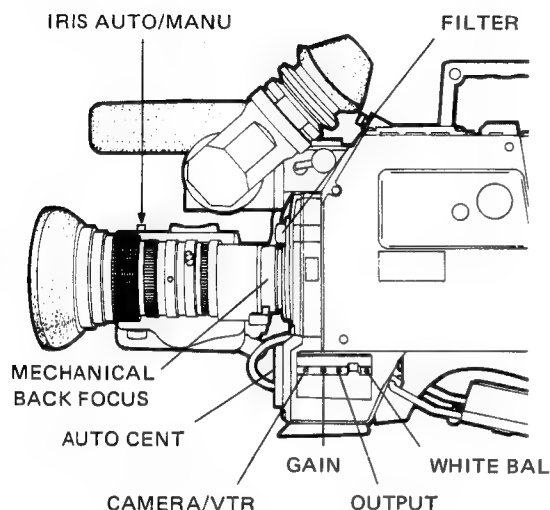


When only the camera is used:



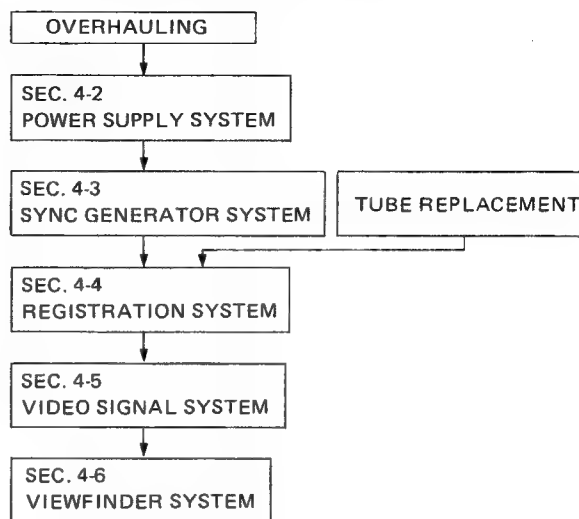
4-1-3. Switch Setting Positions before Adjustments

1. Warm up for about ten minutes with CAMERA/VTR switch "ON" before beginning adjustments.
2. Set the camera switches and controls as follows:



CAMERA/VTR switch : ON
 GAIN switch : 0
 OUTPUT switch : CAM
 WHITE BAL switch : PRESET
 AUTO CENT switch : PRESET
 FILTER knob : 1 (3200°K)
 Lens iris switch : MANU
 Mechanical back focus ring: Set according to the mark.

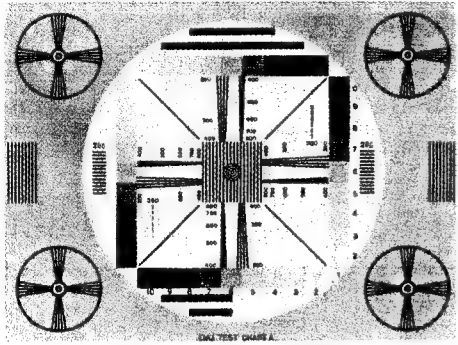
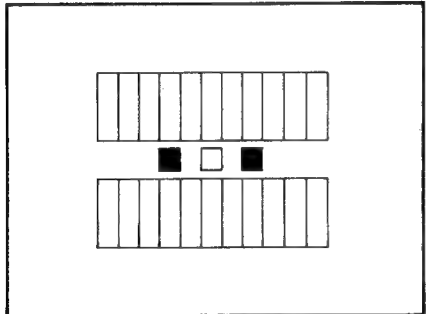
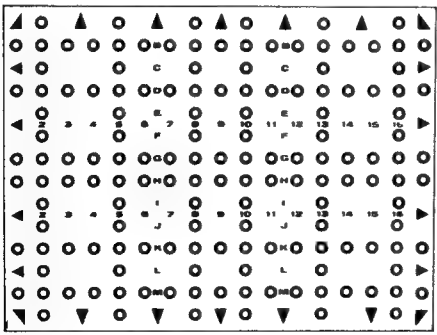
4-1-4. Adjustment Procedures

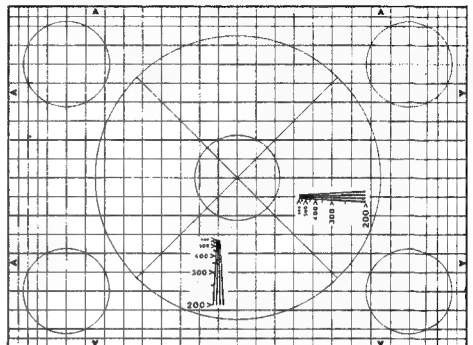
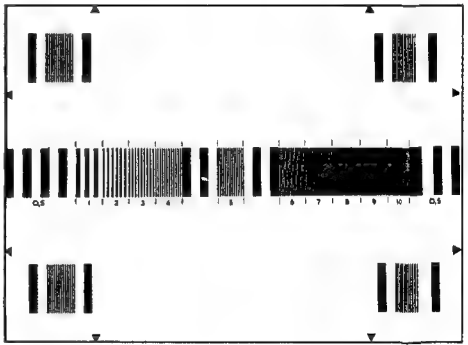
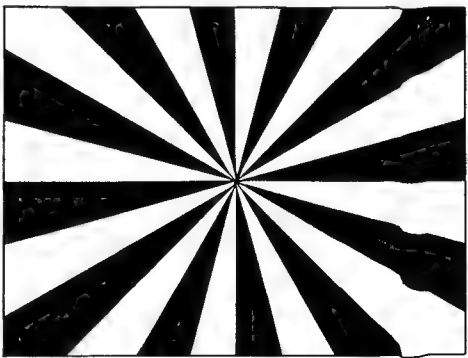


- 1 VA-14 board
BEAM (S1) : OFF
- 3 IE-6P board
DTL (S3) : OFF
- 4 PR-75 board
WHT CLIP (S1) : OFF
MASKING (S2) : OFF
R-γ (S3) : OFF
G-γ (S4) : OFF
B-γ (S5) : OFF
REG/ENC (S8) : REG
DCC (S9) : OFF

γ	(RV7, RV17, RV27)	} : Mechanical center
PED	(RV3, RV13, RV23)	
GAIN	(RV8, RV18, RV28)	
FLR	(RV2, RV12, RV22)	} : Counterclockwise ↺
W.CLIP	(RV6, RV16, RV26)	
MAIN.POINT	(RV20)	: Clockwise ↻

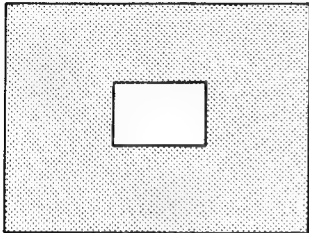
4-1-5. Fixture

J-6026-100-A	Resolution Chart
	
J-6026-130-A	Grayscale Chart
<p>Stick the velvet (black) at both ends of white pattern in the center so as to avoid the light leakage.</p> 	
J-6021-890-A	Ball Pattern Chart
	

J-6026-120-A	Registration Chart
	
J-6026-110-A	Multiburst Chart
	
J-6024-340-B	Siemens Star Chart
	

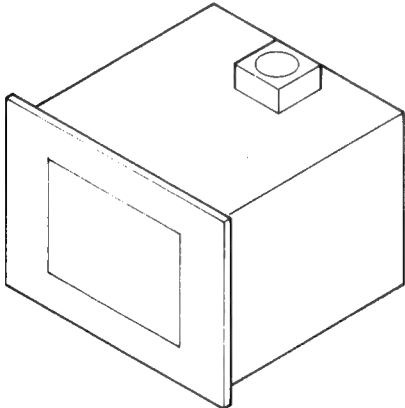
White Window Chart

Cut hole from the center of a sheet of black paper.



J-6029-140-A

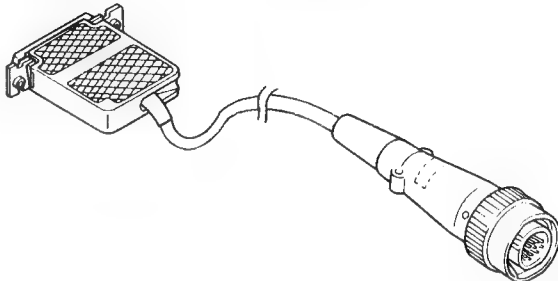
Pattern Box PTB-500 (AC90 to 240V)
(WITH COLOR BAR CHART)



J-6196-080-B

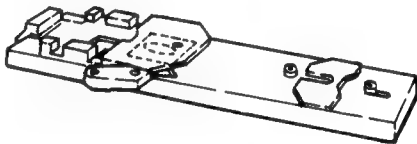
DC Power Cord

Necessary when a CA-3 or CA-30P is not used.



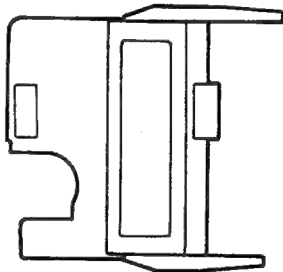
A-7408-015-C

Tripod Adaptor



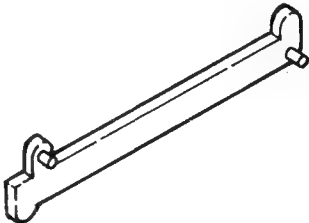
A-7511-898-A

Extension Board (EX-24)



X-3678-613-0

Board Extractor



4-2. POWER SUPPLY ADJUSTMENT

- Notes:**
- The adjustment is not necessary if error is within 3% of rated voltage.
 - When this adjustment is made, all of the following will be required.
 - Step 4-2-1 through step 4-2-4, should be adjusted in order.

To be extended : PW-93 board

4-2-1. +9.5V Adjustment

Measuring equipment: Digital voltmeter
 To be measured : TP2/PW-93 board
 (∇ GND/extension board)
 To be adjusted : \odot RV2/PW-93 board
 Specification : $+9.5 \pm 0.01V$ DC

4-2-2. +9.0V Adjustment

Measuring equipment: Digital voltmeter
 To be measured : A19 or B19 (∇ GND)/extension board
 To be adjusted : \odot RV3/PW-93 board
 Specification : $+9.0 \pm 0.01V$ DC

4-2-3. +6.3V Adjustment

Measuring equipment: Digital voltmeter
 To be measured : Cathode of D36/PW-93 board
 (∇ GND/extension board)
 To be adjusted : \odot RV1/PW-93 board
 Specification : $+6.3 \pm 0.01V$ DC

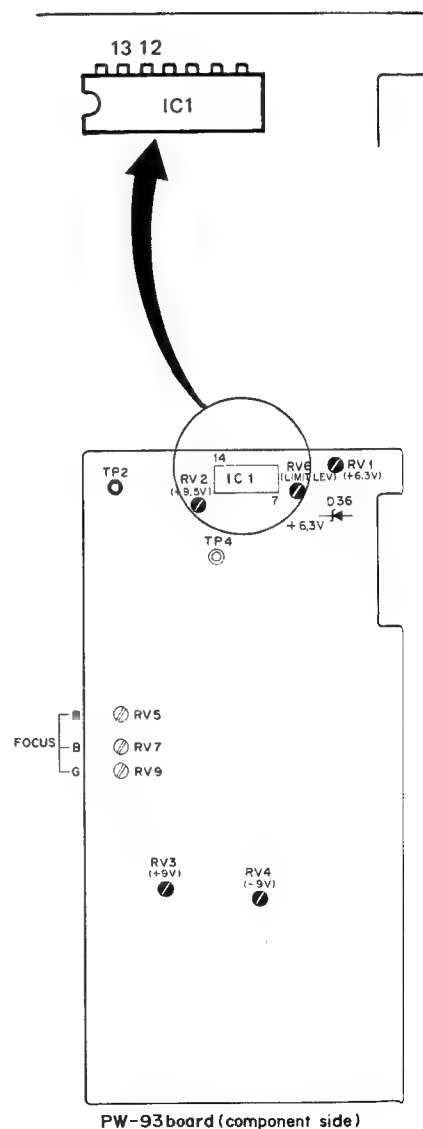
4-2-4. -9.0V Adjustment

Measuring equipment: Digital voltmeter
 To be measured : A1 or B1 (∇ GND)/extension board
 To be adjusted : \odot RV4/PW-93 board
 Specification : $-9.0 \pm 0.01V$ DC

4-2-5. Overcurrent Detect Adjustment

Measuring equipment: Digital voltmeter
 (∇ GND/extension board)

1. Measure the voltage at pin 13 of IC1/PW-93 board and take note this value.
2. Adjust \odot RV6/PW-93 board so that the voltage at pin 12 of IC1/PW-93 board is 0.03V less than voltage measured in Step 1.



4-3. SYNC GENERATOR ADJUSTMENT

- Notes:**
- Warm up the camera for about 15 minutes before adjustment.
 - Be sure in INT mode (Not in GENLOCK mode) Check not to be in the GENLOCK mode.
 - Set the lens iris to CLOSE, unless otherwise specified.

4-3-1. Subcarrier Frequency Adjustment

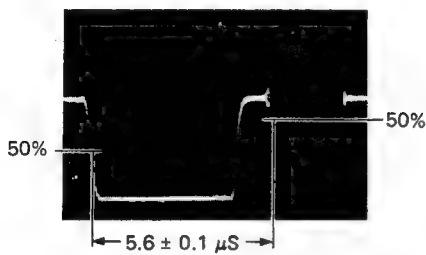
Measuring equipment: Frequency counter
 Connect an inductor (more than 100 μ H) in series with the probe of a counter.

To be measured : TP1 (X1)/SG-63A board
 To be adjusted : RV1/SG-63A board
 Specification : 4,433,619 \pm 3 Hz

4-3-2. Burst-Flag Adjustment

Measuring equipment: Oscilloscope or waveform monitor

To be measured : TEST OUT terminal
 To be adjusted : RV3/SG-63A board
 Specification :



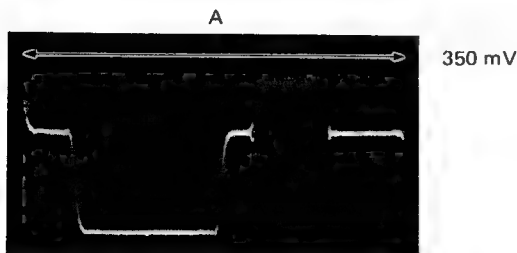
4-3-3. H. BLKG Phase Adjustment

Measuring equipment: Oscilloscope

To be measured : TEST OUT terminal
 To be adjusted : S3/SG-63A board
 Preparation : Shoot entire white of pattern box with auto position.

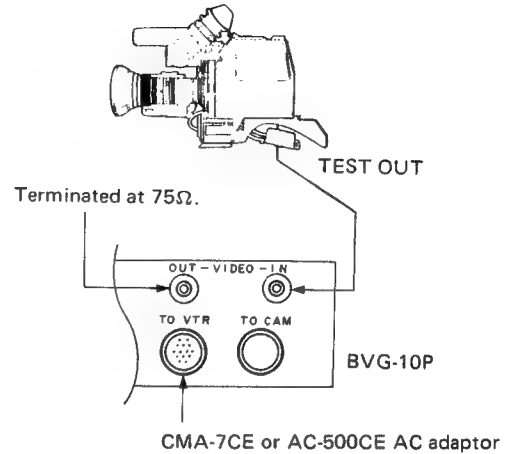
Lens iris : Adjust the iris control so that the output level at TEST OUT is 700 mV.

Specification : A = 12.0 \pm 0.25 μ s

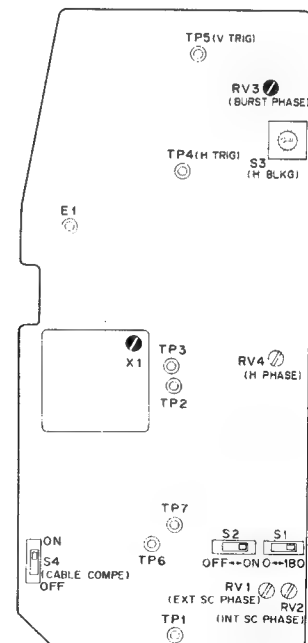
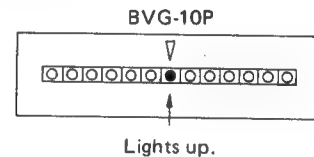


4-3-4. Internal SC Phase Adjustment

Measuring equipment: CF pulse generator (BVG-10P)
 Connection :



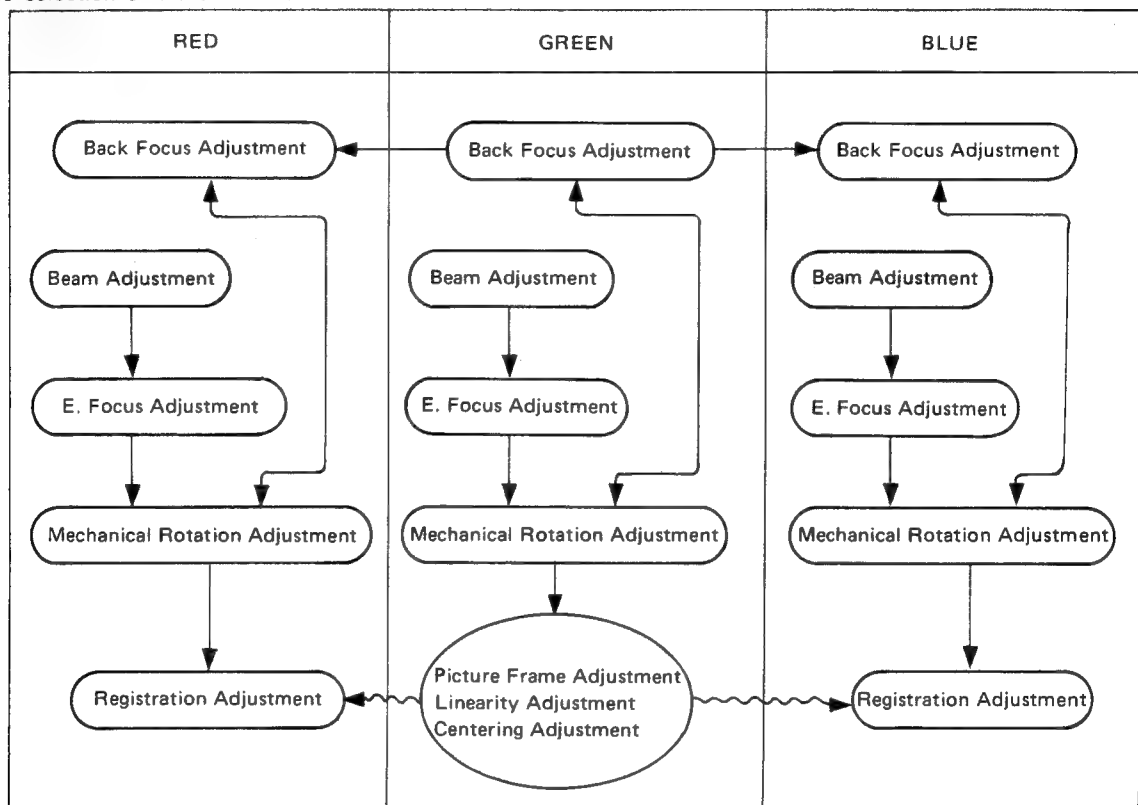
1. Select switch of the BVG-10P to SOURCE CHECK.
2. Adjust the RV2/SG-63A board so that the center LED lamp of the BVG-10P lights.



SG-63A board (component side)

4-4. REGISTRATION ADJUSTMENT

For registration adjustment, each adjustment effect each other, therefore, the repeated adjustment will be required. Following table shows general idea of a relation for each adjustment. The coarse adjustment is as described below. Following table is shown the selection of the switches.

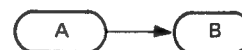


Each switch setting in registration adjustment in order to adjust the registration.

S3 **DTL** /IE-6P board → OFF

S8 **REG/ENC** /PR-75 board → REG

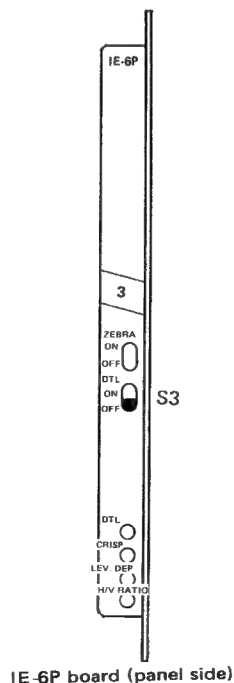
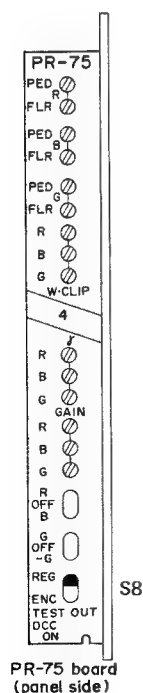
Notes: Meaning of arrows on above table:



If A is adjusted, B should be checked or require to adjust.



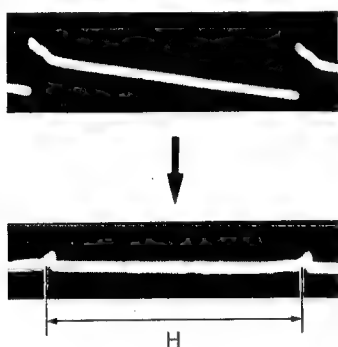
Adjustment A effecting to B. (B conforms to A.)



4-4-1. H. Deflection Balance Adjustment

Note: Calibrate the oscilloscope
CH1 and CH2 gain.

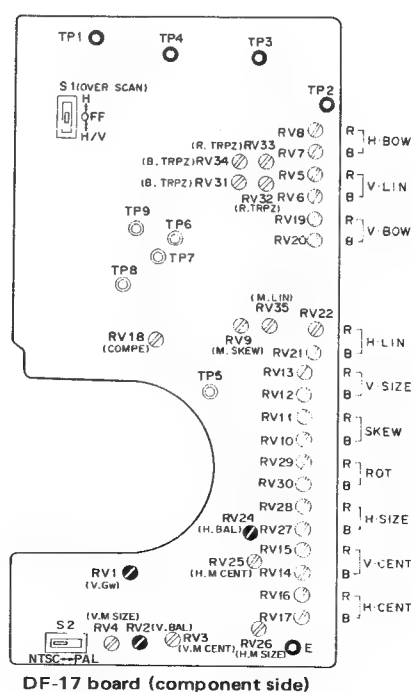
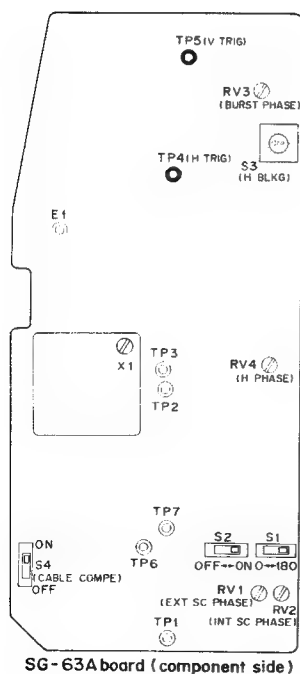
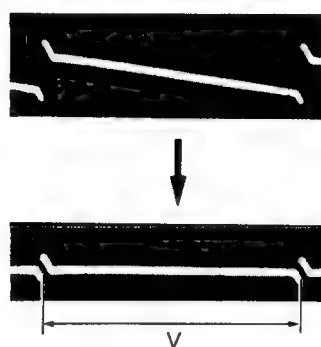
To be extended : DF-17 board
Measuring equipment: Dual trace oscilloscope
To be measured : CH1 → TP2
CH2 → TP3 } /DF-17 board
(∇ E1)
Mode : ADD
Trigger : TP4 (H. TRIG)/SG-63A board
To be adjusted : \odot RV24/DF-17 board



4-4-2. V. Deflection Balance Adjustment

Note: Calibrate the oscilloscope CH1 and CH2 gain.

To be extended : DF-17 board
Measuring equipment: Dual trace oscilloscope
To be measured : CH1 → TP1
CH2 → TP4 } /DF-17 board
(∇ E1)
Mode : ADD
Trigger : TP5 (V. TRIG)/SG-63A board
To be adjusted : \odot RV2/DF-17 board



4-4-3. Gw Voltage Adjustment

- Note:**
- Be sure to carry out 4-4-1. H. Deflection Balance Adjustment and 4-4-2. V. Deflection Balance Adjustment before this adjustment.
 - Calibrate the oscilloscope CH1 and CH2 gain.

To be extended : DF-17 board

Measuring equipment: Dual trace oscilloscope

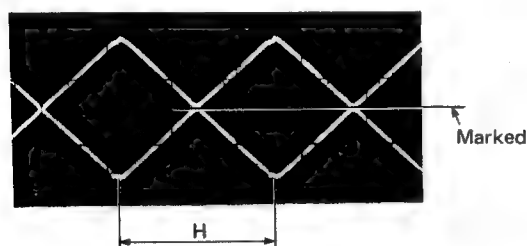
Mode : ALT

Preparation : Set the oscilloscope VOLTS/DIV to 20 and set correctly the grounding in the channels 1 and 2.

Trigger : TP4 (H.TRIG) } /SG-63A board
TP5 (H.TRIG)

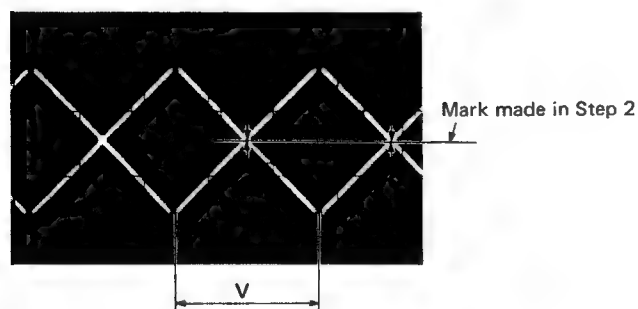
1. CH1 → TP2 } /DF-17 board
CH2 → TP3 }
(∇ E1)

2. Mark at the intersection of positive and negative deflection waveforms.



3. CH1 → TP1 } /DF-17 board
CH2 → TP4 }
(∇ E1)

4. Using \odot RV1 on the DF-17 board, align the intersection of vertical deflection waveforms with the mark made in Step 2.

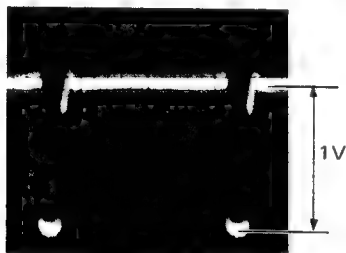


4-4-4. G. Beam, ABO Adjustment

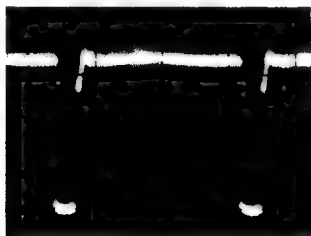
Note: Avoid continuous shooting of bright object in order to protect the tubes, for a long period.

Object : White window chart
 Measuring equipment: Oscilloscope
 To be extended : VA-14 board
 Preparations :
 ⌚ RV11 → Fully Counterclockwise ⌚
 ⌚ RV12 → Fully Clockwise ⌚
 ⌚ RV14 → Fully Counterclockwise ⌚
 ⌚ RV15 → Fully Counterclockwise ⌚
 } /VA-14 board
 Trigger : TP4 (H.TRIG)/SG-63A board

1. Adjust the zoom control so that the white window frame touches the underscanned picture frame on the monitor.
2. Adjust the iris control so that level at B9/extension board is 0.4 Vp-p, and take note of F value.
3. Open the lens iris gradually and adjust the ⌚RV13 [G. BEAM] /VA-14 board so that the video waveform of B9 just starts to clip at 1V.

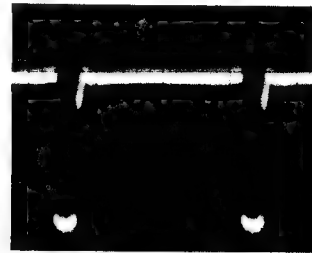


4. Turn the ⌚RV11/VA-14 board clockwise so that the waveform of B9 is slightly oscillated.

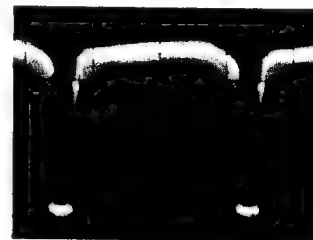


If the waveform of B9 is not oscillated by turning the ⌚RV11 fully clockwise, set the ⌚RV11 immediately before the lack of beam occurs by opening the lens iris 3 more stops than 2. In this case, the adjustments in Steps 5 and 6 are not required.

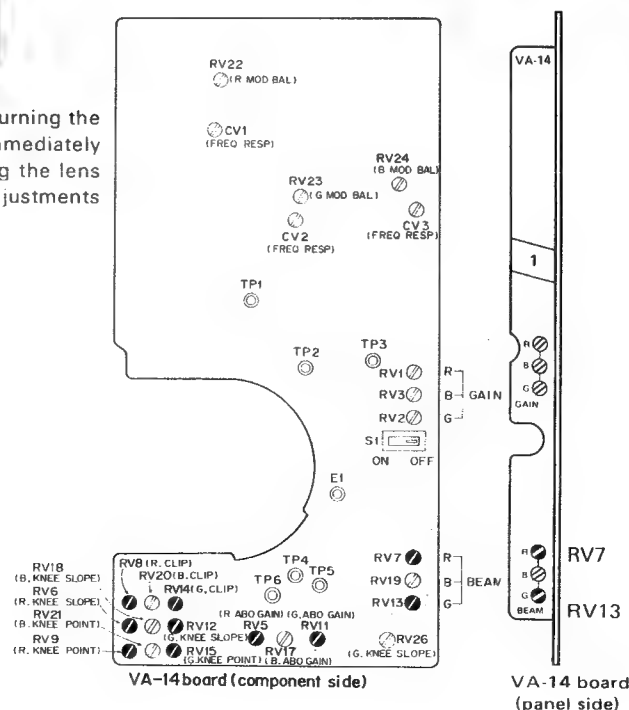
5. Stop oscillating by Adjusting the ⌚RV15/VA-14 board.



6. Open the lens iris 3 more stops from F value noted on Step 1 and adjust the ⌚RV12/VA-14 board to avoid the lack of beam or oscillation.



7. Adjust the ⌚RV14/VA-14 board so that the waveform is clipped with same iris position in Step 5.

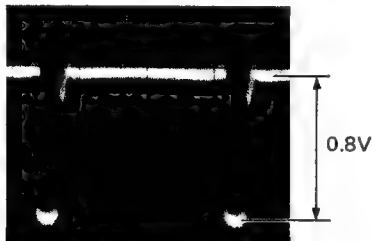


4-4-5. R. Beam, ABO Adjustment

Note: Avoid continuous shooting of bright object in order to protect the tubes, for a long period.

Object : White window chart
 Measuring equipment: Oscilloscope
 To be extended : VA-14 board
 Preparations : \odot RV5 \rightarrow Fully Counterclockwise \curvearrowright
 \odot RV6 \rightarrow Fully Clockwise \curvearrowright
 \odot RV8 \rightarrow Fully Counterclockwise \curvearrowright
 \odot RV9 \rightarrow Fully Counterclockwise \curvearrowright } /VA-14 board
 Trigger : TP4 (H.TRIG)/SG-63A board

1. Adjust the zoom control so that the white window frame touches the underscanned picture frame on the monitor.
2. Adjust the iris control so that level at B9/extension board is 0.4 Vp-p, and take note of F value.
3. Open the lens iris gradually and adjust the \odot RV7 **R. BEAM** /VA-14 board so that the video waveform of B7/extension board just starts to clip at 0.8V.

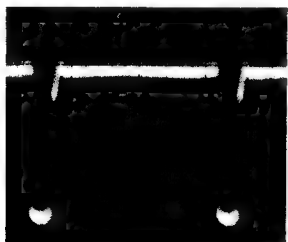


4. Turn the \odot RV5/VA-14 board clockwise so that the waveform of B7 is slightly oscillated.



If the waveform of B7 is not oscillated by turning the \odot RV5 fully clockwise, set the \odot RV5 immediately before the lack of beam occurs by opening the lens iris 3 more stops than 2. In this case, the adjustments in Steps 5 and 6 are not required.

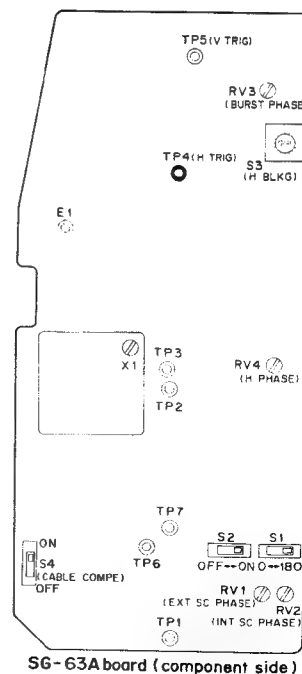
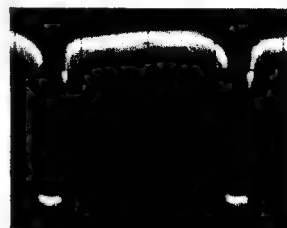
5. Stop oscillating by Adjusting the \odot RV9/VA-14 board.



6. Open the lens iris 3 more stops from F value noted on Step 1 and adjust the \odot RV6/VA-14 board to avoid the lack of beam or oscillation.



7. Adjust the \odot RV8/VA-14 board so that the waveform is clipped with same iris position in Step 5.



4-4-6. B. Beam, ABO Adjustment

Note: Avoid continuous shooting of bright object in order to protect the tubes, for a long period.

Object : White window chart

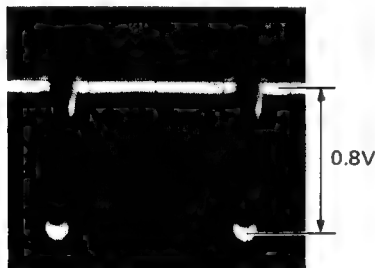
Measuring equipment: Oscilloscope

To be extended : VA-14 board

Preparations : \odot RV17 \rightarrow Fully Counterclockwise \odot
 \odot RV18 \rightarrow Fully Clockwise \odot
 \odot RV20 \rightarrow Fully Counterclockwise \odot
 \odot RV21 \rightarrow Fully Counterclockwise \odot } /VA-14 board

Trigger : TP4 (H.TRIG)/SG-63A board

1. Adjust the zoom control so that the white window frame touches the underscanned picture frame on the monitor.
2. Adjust the iris control so that level at B9/extension board is 0.4 Vp-p, and take note of F value.
3. Open the lens iris gradually and adjust the \odot RV19 [B. BEAM] /VA-14 board so that the video waveform of A11/extension board just starts to clip at 0.8V.

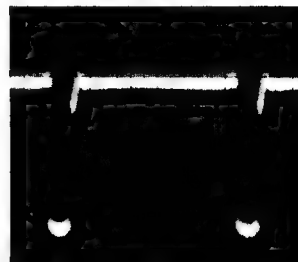


4. Turn the \odot RV17/VA-14 board clockwise so that the waveform of A11 is slightly oscillated.

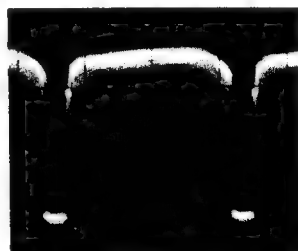


If the waveform of A11 is not oscillated by turning the \odot RV17 fully clockwise, set the \odot RV17 immediately before the lack of beam occurs by opening the lens iris 3 more stops than 2. In this case, the adjustments in Steps 5 and 6 are not required.

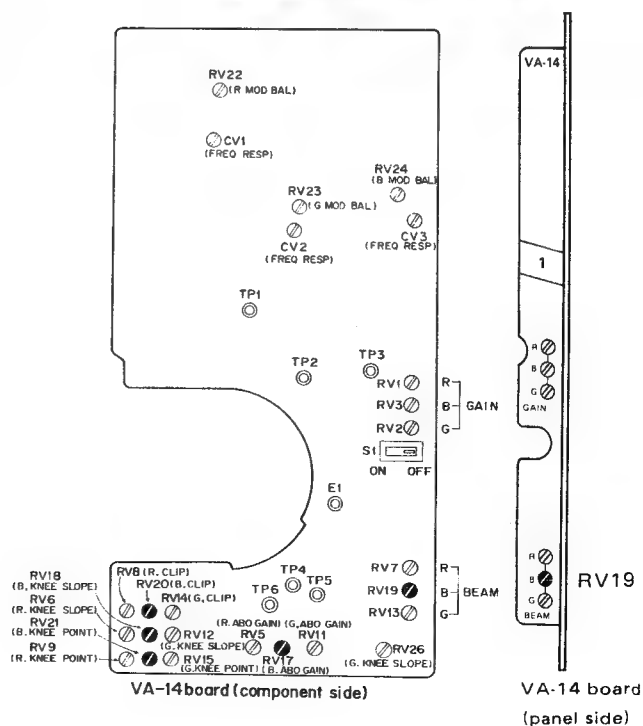
5. Stop oscillating by Adjusting the \odot RV21/VA-14 board.



6. Open the lens iris 3 more stops from F value noted on Step 1 and adjust the \odot RV18/VA-14 board to avoid the lack of beam or oscillation.



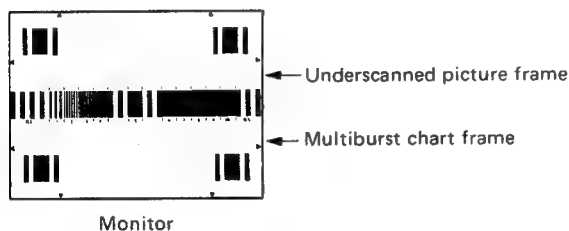
7. Adjust the \odot RV20/VA14 board so that the waveform is clipped with same iris position in Step 5.



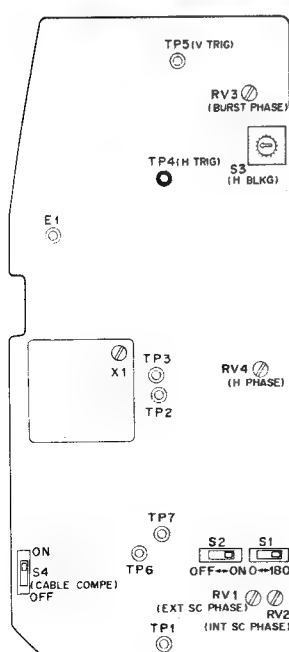
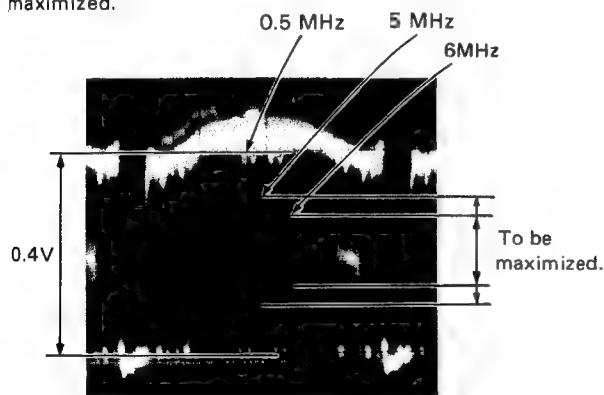
4-4-7. GREEN E. FOCUS Adjustment

Object : Multiburst chart
 Measuring equipment: Oscilloscope
 To be extended : VA-14 board
 Trigger: :TP4 (H.TRIG)/SG-63A board

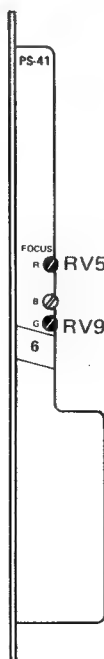
1. Adjust the zoom control so that the registration chart frame touches the underscanned picture frame on the monitor.



2. Adjust the iris control so that the video level corresponding to 0.5 MHz at B9/extension board is 0.4 Vp-p.
3. Adjust the focus control so that the waveform signal amplitude at 5 MHz is maximized.
4. Adjust the \odot RV9 **G. FOCUS** /PW-93 board so that the waveform signal amplitudes at both 5 MHz and 6 MHz are maximized.



SG-63A board (component side)



PW-93 board (panel side)

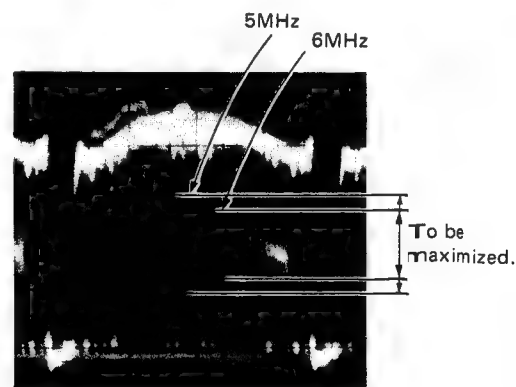
4-4-8. RED E. FOCUS ADJUSTMENT

Object : Multiburst chart
 Measuring equipment: Oscilloscope
 To be extended : VA-14 board
 Trigger: :TP4 (H.TRIG)/SG-63A board

1. Adjust the zoom control so that the registration chart frame touches the underscanned picture frame on the monitor.



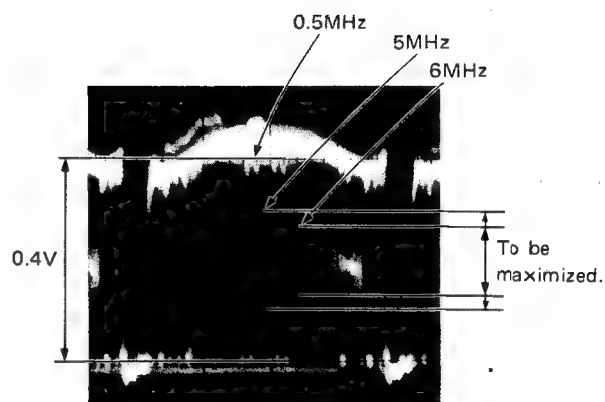
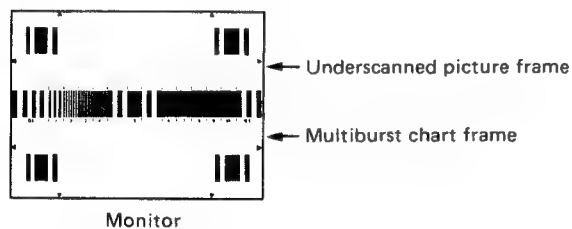
2. Adjust the iris control so that the video level corresponding to 0.5 MHz at B9/extension board is 0.4 Vp-p.
3. Adjust the focus control so that the waveform signal amplitude corresponding to 5 MHz at B7/extension board is maximized.
4. Adjust the \odot RV5 **R. FOCUS** /PW-93 board so that the waveform signal amplitudes corresponding to both 5 MHz and 6 MHz at B7 are maximized.



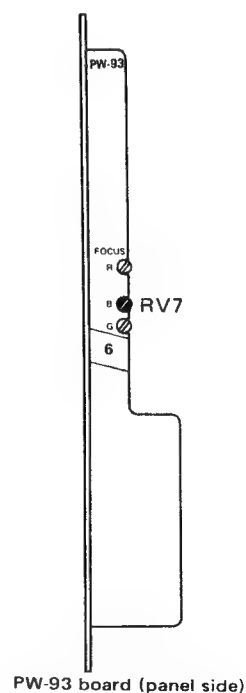
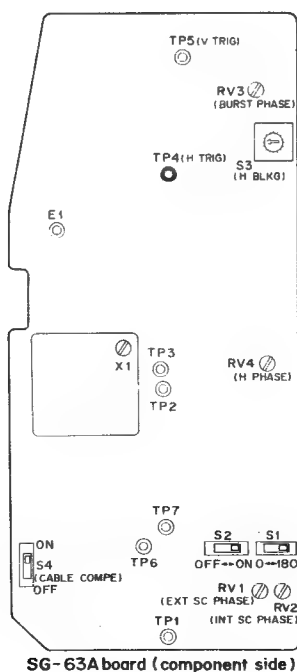
4-4-9. BLUE E. FOCUS Adjustment

Object : Multiburst chart
 Measuring equipment: Oscilloscope
 To be extended : VA-14 board
 Trigger : TP4 (H. TRIG)/SG-63A board

1. Adjust the zoom control so that the registration chart frame touches the underscanned picture frame on the monitor.



2. Adjust the iris control so that the video level corresponding to 0.5 MHz at B9/extension board is 0.4 Vp-p.
3. Adjust the focus control so that the waveform signal amplitude corresponding to 5 MHz at A11/extension board is maximized.
4. Adjust the \odot RV7 **B. FOCUS** /PW-93 board so that the waveform signal amplitudes corresponding to both 5 MHz and 6 MHz at A11 are maximized.



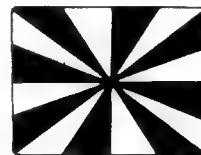
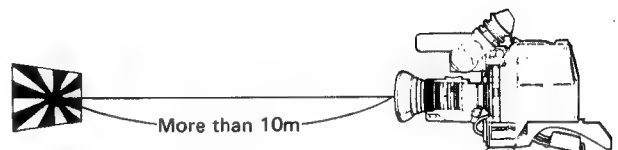
4-4-10. GREEN Back Focus Adjustment

Notes: Never turn the back focus adjusting screw shown below except when replacing the pickup tube of G channel. Adjust the back focus of lens for back focus adjustment. However, when the pickup tube is replaced or the adjustment cannot be made on the lens side, set the lens back focus ring at the marked position so as to make the following adjustment.

Object : Siemens-star chart
 Preparations : S8 REG/ENC → REG } /PR-75 board
 S7 G/-G → G
 S6 R/B → OFF
 Lens iris : Open

1. Set the zoom control at TELE so as to obtain the maximum multiplication factor. Optically focus the image so as to obtain the maximum resolution.
2. Set the zoom control at WIDE so as to obtain the minimum multiplication factor. Do not optically focus the image at this time. Check whether the image is focused on the monitor while turning the zoom control from TELE to WIDE. If the image is not focused, properly set at back focus as follows:
3. Carefully loosen the setscrew shown below. When the zooming mechanism is set at WIDE, turn the back focus adjusting screw.
4. Tighten the setscrew after repeating Step 1 through Step 3 several times.

Note: When the zoom control is set at WIDE, be careful not to be exposed to strong light such as a fluorescent lamp.

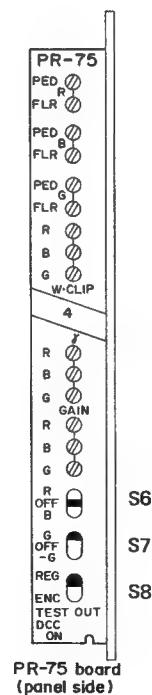
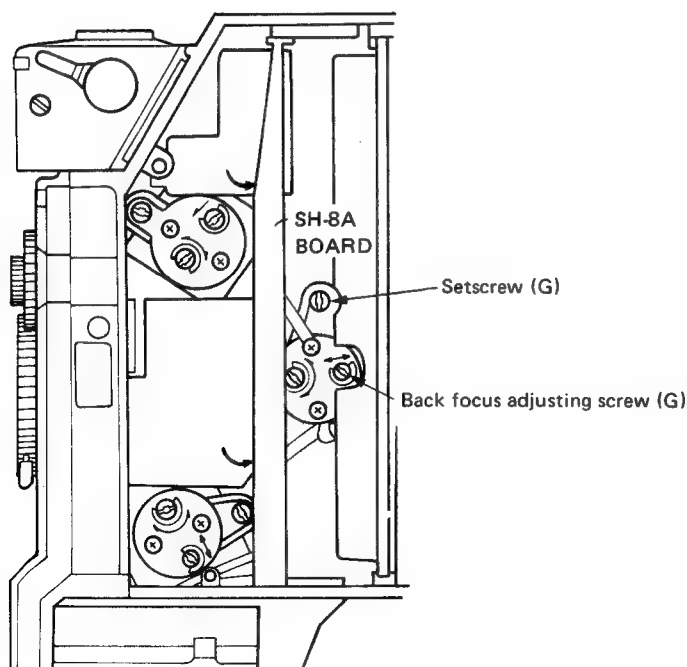


(TELE)



(WIDE)

Monitor screen



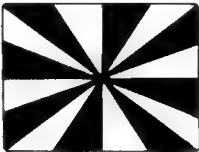
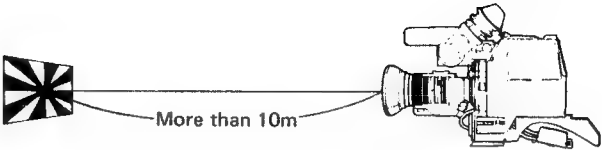
4-4-11. RED Back Focus Adjustment

Note: Prior to this adjustment, confirm that the back focus in the green channel is set at a proper position. If not, first of all, make the back focus adjustment in the green channel.

Object : Siemens-star chart
 Preparation : S8 REG/ENC/PR-75 board → REG
 Lens iris : Open

1. S7 $\frac{G}{-G}$ → G } /PR-75 board
 S6 $\frac{R}{B}$ → OFF }
2. Set the zoom control at TELE so as to obtain the maximum multiplication factor. Do not touch the focus control after setting its position in this step during this adjustment.
3. S7 $\frac{G}{-G}$ → OFF } /PR-75 board
 S6 $\frac{R}{B}$ → R }
4. Set the zoom control at TELE so as to obtain the maximum multiplication factor. If the image is not focused, carefully loosen the setscrew shown below and tighten the setscrew after the back focus adjusting screw is set at the optimum focus position.

Note: When the zoom control is set at WIDE, be careful not to be exposed to strong light such as a fluorescent lamp.

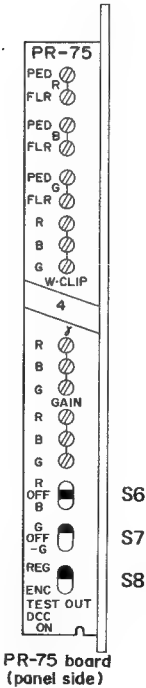
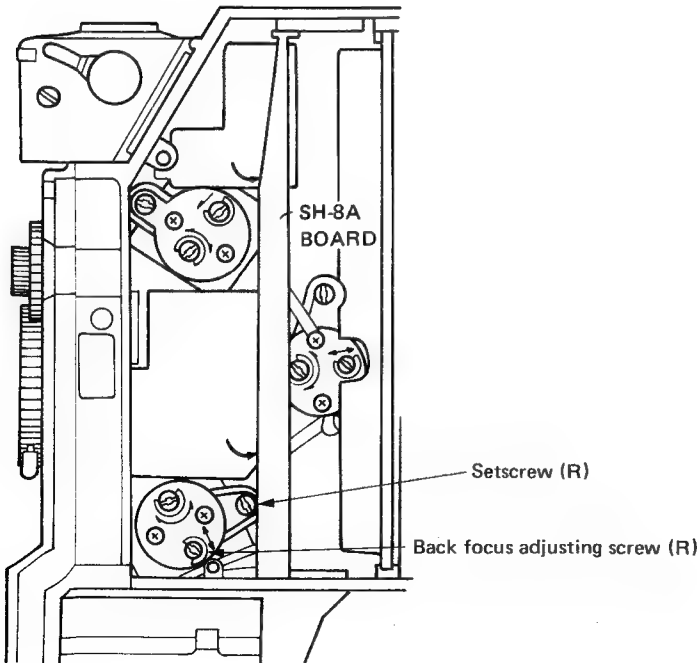


(TELE)



(WIDE)

Monitor screen



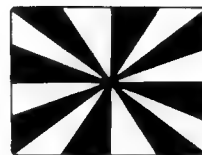
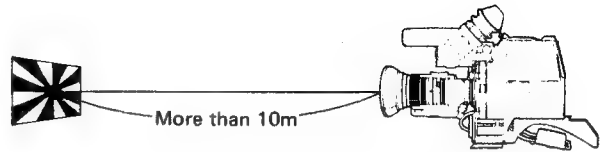
4-4-12. BLUE Back Focus Adjustment

Note: Prior to this adjustment, confirm that the back focus in the green channel is set at a proper position. If not, first of all, make the back focus adjustment in the green channel.

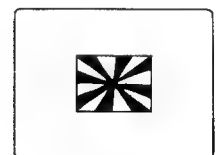
Object : Siemens-Star chart
Preparation: : S8 **REG/ENC** /PR-75 board → REG
Lens iris : Open

1. S7 **G/-G** → G } /PR-75 board
S6 **R/B** → OFF }
2. Set the zoom control at TELE so as to obtain the maximum multiplication factor. Do not touch the focus control after setting its position in this step during this adjustment.
3. S7 **G/-G** → OFF } /PR-75 board
S6 **R/B** → B }
4. Set the zoom control at TELE so as to obtain the maximum multiplication factor. If the image is not focused, carefully loosen the setscrew shown below and tighten the setscrew after the back focus adjusting screw is set at the optimum focus position.

Note: When the zoom control is set at WIDE, be careful not to be exposed to strong light such as a fluorescent lamp.

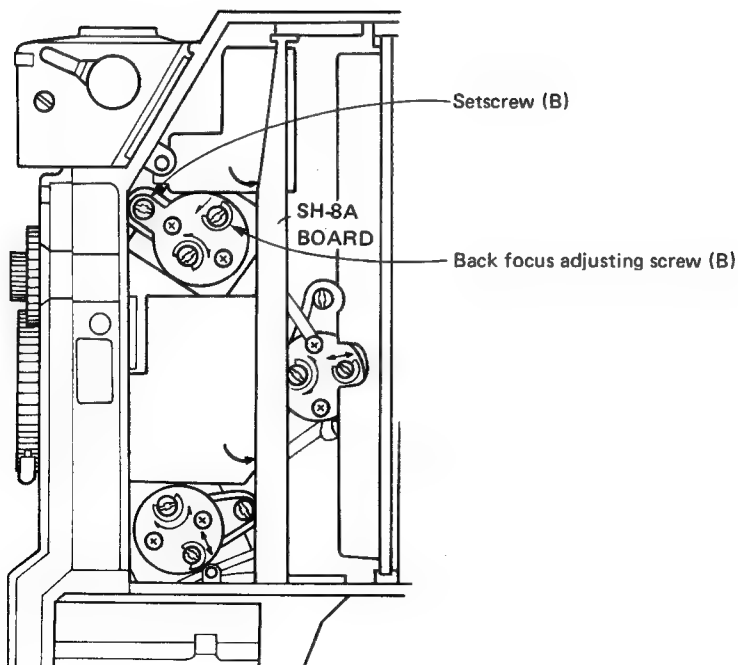


(TELE)



(WIDE)

Monitor screen

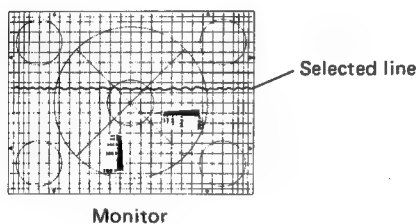


4-4-13. GREEN Rotation Adjustment

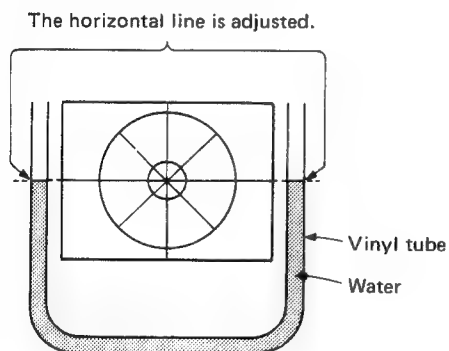
Note: After this adjustment, check the back focus adjustment in the green channel.

Object : Registration chart
 Preparations: : S8 REG/ENC → REG } /PR-75 board
 : S7 G/-G → G
 : S6 R/B → OFF
 Set the tripod adaptor horizontally by using a level, and then mount the camera.
 Set the registration chart at the horizontal position.

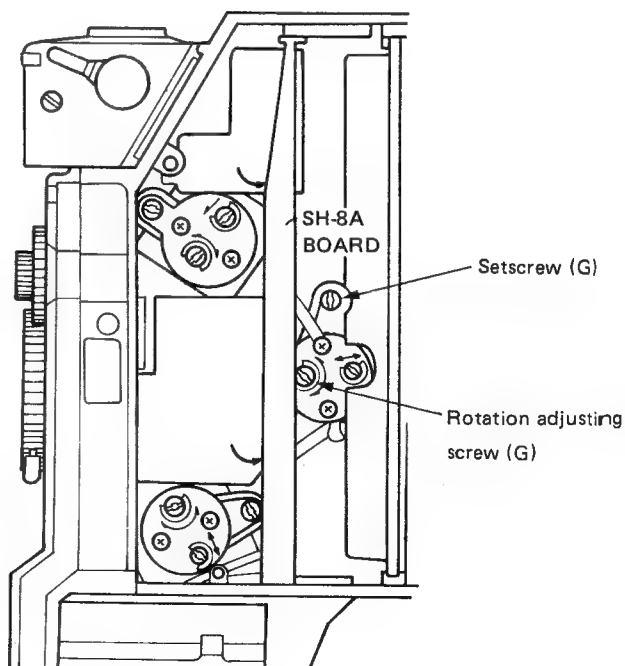
1. Select the lines by using a Waveform monitor and confirm that the horizontal line of the registration chart is in parallel with the selected line on the monitor.



- The use of a transparent vinyl tube containing water, instead of a level, makes it possible to set the registration chart correctly at the horizontal position.



2. If these 2 lines are not in parallel, make the following adjustments.
3. Carefully loosen the setscrew shown below:
 If the setscrew is loosened too much, back focus will tend to be inaccurate when rotation adjustment is done. Be careful not to loosen it too much.
 (turning angle: approx. $90^\circ \sim 100^\circ$)
4. Adjust the positioning screw so that the selected line on the monitor is in parallel with the horizontal line of the registration chart.
5. Carefully tighten the setscrew.



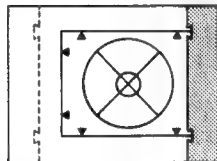
4-4-14. GREEN Centering and Picture Frame Size Adjustment

Note: Check the Rotation adjustment in the green channel before this adjustment.

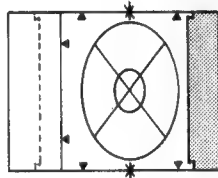
Object : Registration chart
 Lens iris : F16
 To be extended : DF-17 board
 Preparations : S8 REG/ENC → REG
 S7 G/-G → G
 S6 R/B → OFF
 } /PR-75 board

The camera should be located right in front of the registration chart.

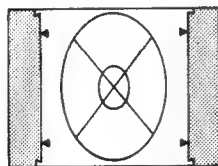
1. S1 **OVER SCAN**/DF-17 board → H/V
2. (V. CENTERING)
Place the vertical frame at right edge of the registration chart over a photoconductive marker by panning or tilting the camera and using the zoom control.





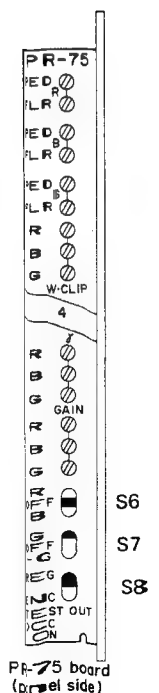
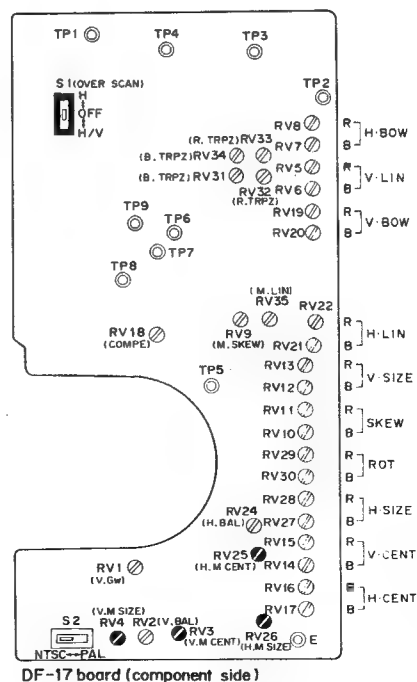
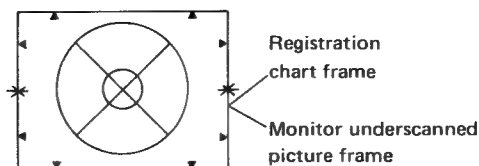
3. S1 **OVER SCAN**/DF-17 board → H
4. (V. SIZE)
- Place the vertical frame of the registration chart over the entire frame by using the ●RV3 and ●RV4/DF-17 board.



5. (H. CENTERING)
Place the horizontal frame of the registration chart over a photoconductive marker by panning a camera and using the zoom control.
After that, be careful not to move the camera.



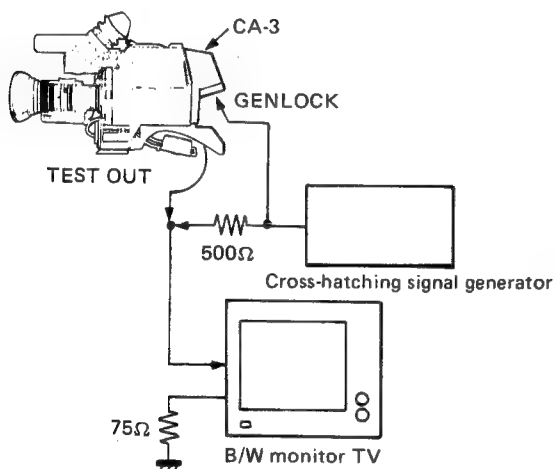
6. S1 **OVER SCAN**/DF-17 board → OFF
7. Place the vertical frame of the registration chart over the entire frame by using the zoom control.
8. (H. SIZE)
Place the horizontal frame of the registration chart over the entire frame by using the  RV25 and  RV26/DF-17 board.



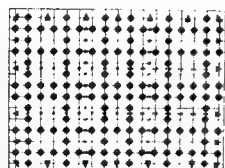
4-4-15. GREEN Linearity Adjustment

- Object : Ball chart
 Measuring equipment: Cross-hatching signal generator
 Preparations : S8 **REG/ENC** → REG
 S7 **G/-G** → G
 S6 **R/B** → OFF } /PR-75 board
- The camera should be located right in front of the pattern box.
 - Use the pattern box in the AUTO mode.

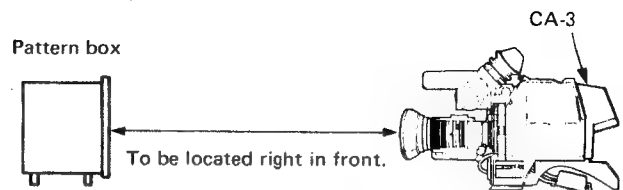
When CA-3 is used
 (Connection)



- Adjust the zoom control so that the ball chart frame touches the underscanned picture frame on the monitor.
- Center the cross-hatching pattern at the center of the monitor screen by using RV4/SG-63A board.
- Set the intersection points of orthogonal lines on a cross-hatching pattern at the centers of circles by using RV3, RV4, RV25, RV26, RV35, and RV9/DF-17 board.
- When the number (13) of horizontal lines in the cross-hatching signal is not the same as the number (14) of marks in the ball chart, stretch the vertical size by using the RV4/DF-17 board. After the linearity adjustment is completed, place the ball chart over the entire frame, again, by using the RV4.

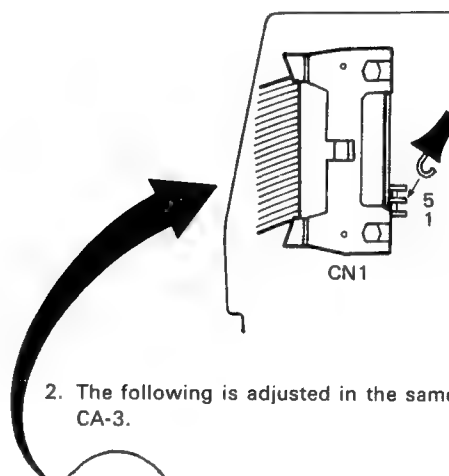


Monitor (Underscanning)

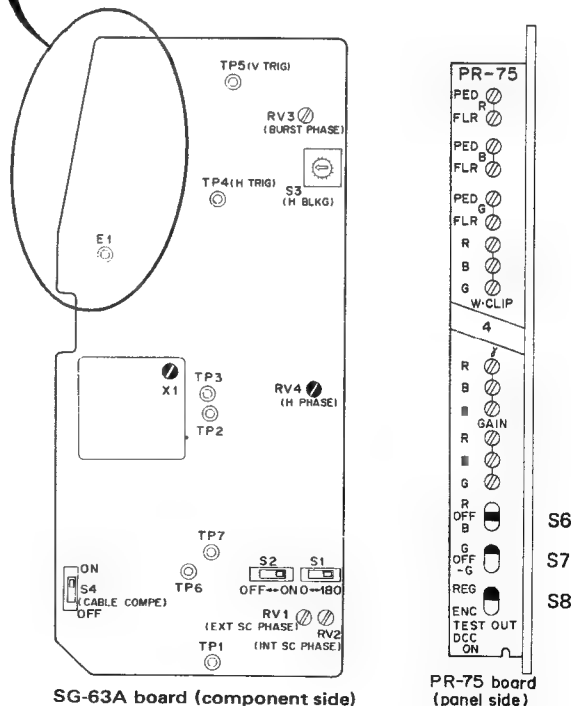


When CA-3 is not used

- Supply the cross-hatching signal fed to the GENLOCK terminal of CA-3 to CN1 pin 5 on the SG-63A board.



- The following is adjusted in the same manner as the use of CA-3.



Note: After the linearity adjustment is completed, readjust the 4-4-14. GREEN Centering and Picture Frame Size Adjustment.

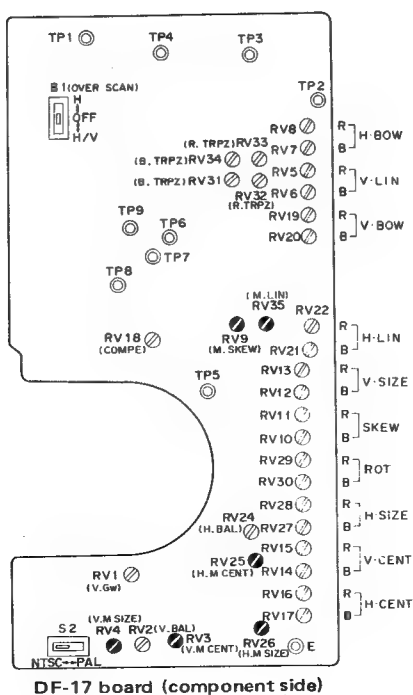
4-4-16. Registration Adjustment

1. Remarks on the color monitor

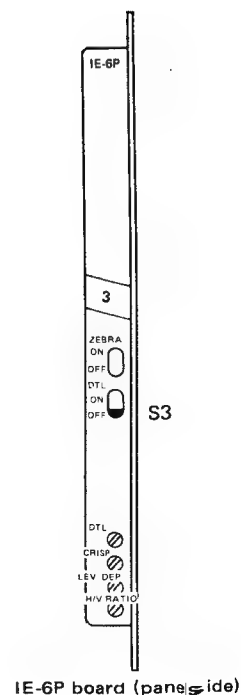
Use the B/W monitor. If necessary, use the color monitor after convergence adjustment. Fully turn the chrominance level adjuster on the color monitor counterclockwise, or set the monitor to the B/W mode before starting the adjustment.

2. Preparations before registration adjustment

- Set the lens iris at CLOSE after the power is turned on, and then warm up the camera for about 30 minutes before adjustment.
- Adjust the zoom control so that the registration chart frame touches the underscanned picture frame on the monitor.
- Use the pattern box in the AUTO mode.
- Filter position → 1
- S3 **DTL** /IE-6P board → OFF
- Set the S8 **REG/ENC** /PR-75 board at ENC and adjust the iris control so that the white level of TEST OUT is 70 IRE.
- S8 **REG/ENC** /PR-75 board → REG
- To be extended: DF-17 board
- AUTO CENT switch → PRESET



DF-17 board (component side)



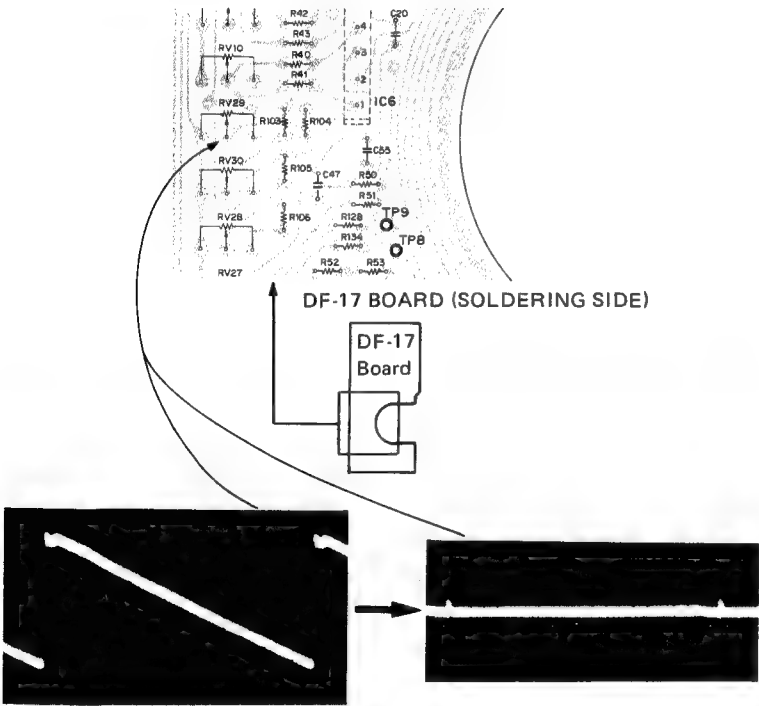
IE-6P board (panel side)

4-4-17. RED Rotation Adjustment

Note: The RED Rotation adjustment exerts influence on the 4-4-11. RED Back FOCUS Adjustment, so be sure to check the RED back focus adjustment after the Rotation adjustment is completed.

Object : Registration chart
Measuring equipment: Oscilloscope
To be extended : DF-17 board
Trigger : TP4 (H. TRIG)/SG-63A board

- 1. S7 $\frac{G}{-G} \rightarrow -G$
S6 $\frac{R}{B} \rightarrow R$ } /PR-75 board
- 2. Check whether 2 horizontal lines at the center of the R and -G picture are in parallel or overlapped.
If these 2 lines are not in parallel or overlapped, make the following adjustments.
- 3. Connect the probe of an oscilloscope to the center of the $\text{RV29 (R. ROT) /DF-17 board}$ (refer to the figure below) and adjust the RV29 (R. ROT) so that the corrected waveform disappears on the monitor.

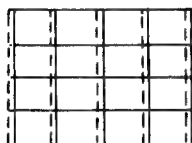


4-4-18. RED Registration Adjustment

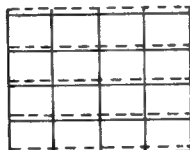
Note: The following ⚙ RVs exert influence one another, so the adjustment should be repeatedly made.

Adjustment : When the picture in the red channel is diverged, as shown below, make adjustment by using the respective ⚙ RVs.

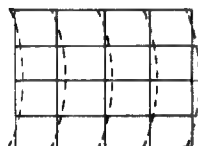
⚙ RV16 (H. CENT)



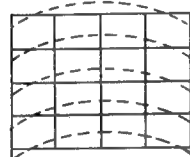
⚙ RV15 (V. CENT)



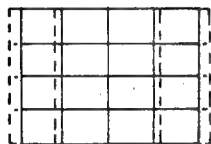
⚙ RV8 (H. BOW)



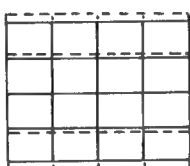
⚙ RV19 (V. BOW)



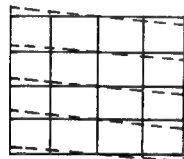
⚙ RV28 (H. SIZE)



⚙ RV13 (V. SIZE)



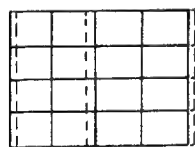
⚙ RV29 (ROT)



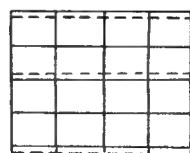
⚙ RV11 (SKEW)



⚙ RV22 (H. LIN)



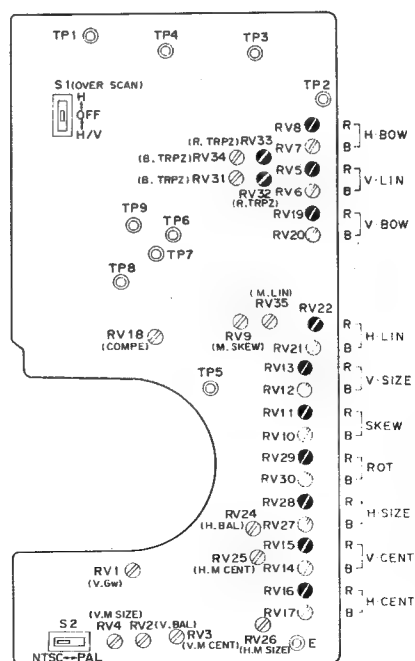
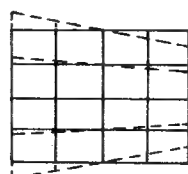
⚙ RV5 (V. LIN)



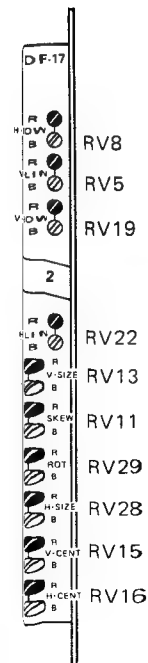
⚙ RV33 (H. TRPZ)



⚙ RV32 (V. TRPZ)



DF-17 board (component side)



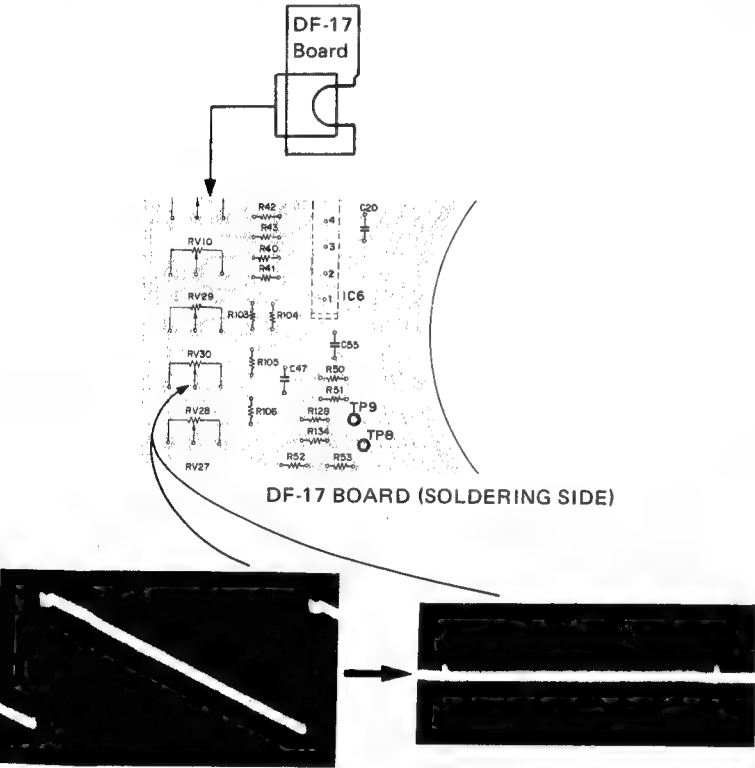
DF-17 board (panel side)

4-4-19. BLUE Rotation Adjustment

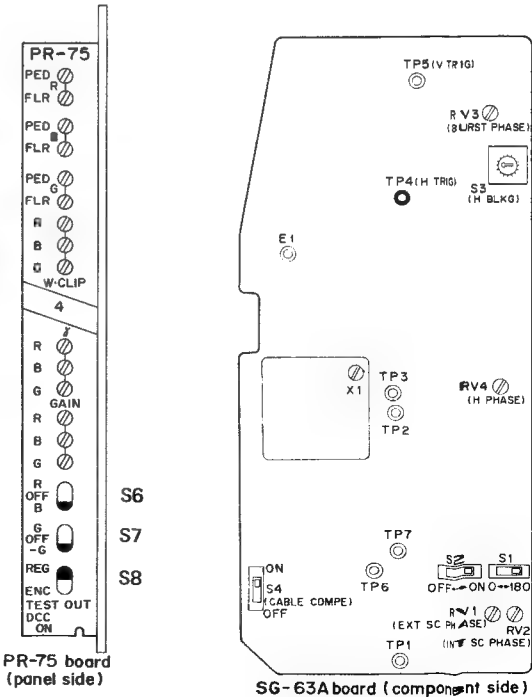
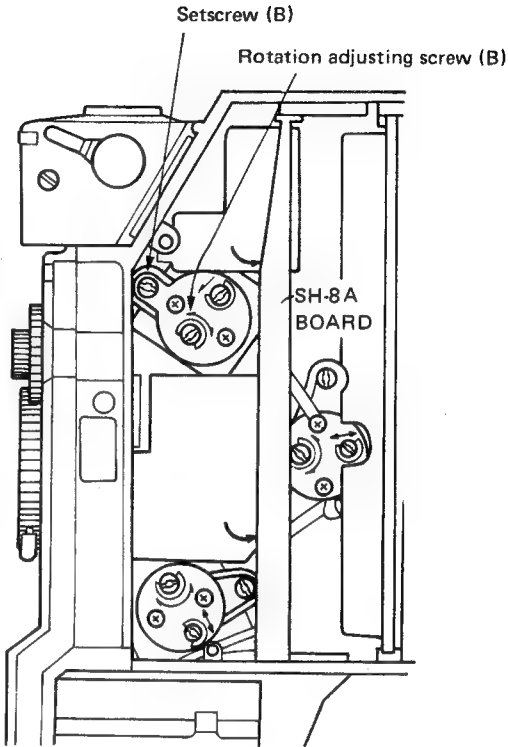
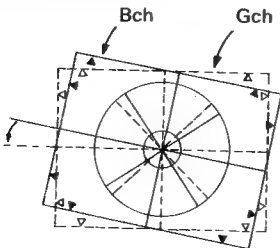
Note: The BLUE Rotation adjustment exerts influence on the 4-4-12. BLUE Back FOCUS Adjustment, so be sure to check the BLUE back focus adjustment after the Rotation adjustment is completed.

Object : Registration chart
Measuring equipment: Oscilloscope
To be extended : DF-17 board
Trigger : TP4 (H. TRIG)/SG-63A board

- 1. S7 $\frac{G}{-G} \rightarrow -G$
S6 $\frac{R}{B} \rightarrow B$ } /PR-75 board
- 2. Check whether 2 horizontal lines at the center of the B and -G picture are in parallel or overlapped.
If these 2 lines are not in parallel or overlapped, make the following adjustments.
- 3. Connect the probe of an oscilloscope to the center of the RV30 [B. ROT]/DF-17 board (refer to the figure below) and adjust the RV30 [B. ROT] so that the corrected waveform disappears on the monitor.



- 4. Carefully loosen the setscrew shown above.
Adjust the positioning screw so that the horizontal line at the center of the B picture is overlapped or in parallel with the picture in the green channel.
- 5. Carefully tighten the setscrew.

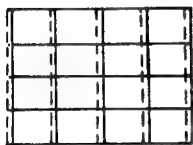


4-4-20. BLUE Registration Adjustment

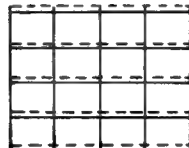
Note: The following RVs exert influence one another, so the adjustment should be repeatedly made.

Adjustment : When the picture in the blue channel is diverged, as shown below, make adjustment by using the respective RVs.

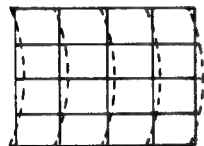
RV17 (H. CENT)



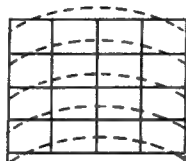
RV14 (V. CENT)



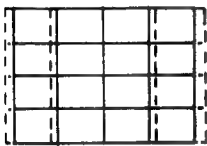
RV7 (H. BOW)



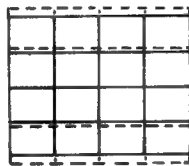
RV20 (V. BOW)



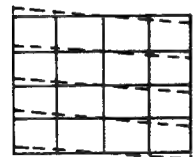
RV27 (H. SIZE)



RV12 (V. SIZE)



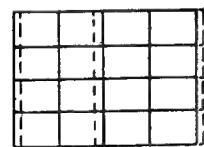
RV30 (ROT)



RV10 (SKEW)



RV21 (H. LIN)



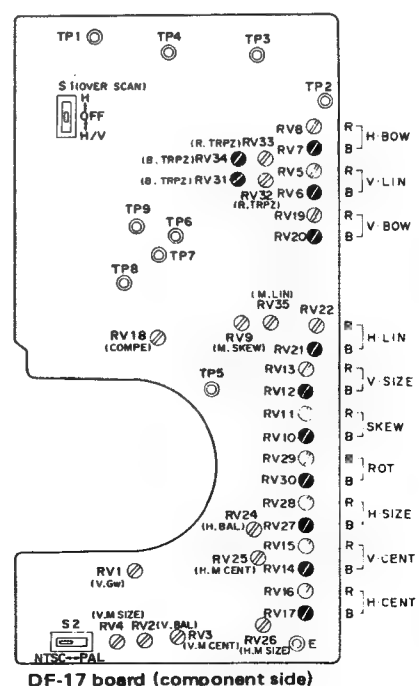
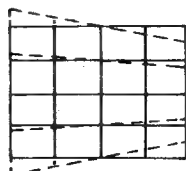
RV6 (V. LIN)



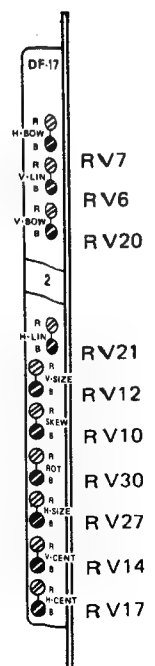
RV34 (H. TRPZ)



RV31 (V. TRPZ)



DF-17 board (component side)

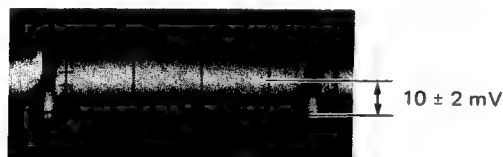


DF-17 board (panel side)

4-5. VIDEO SIGNAL ADJUSTMENT

4-5-1. Bias Light Adjustment

Lens : Close
 Measuring equipment : Oscilloscope
 To be extended : VA-14 board
 Preparations : S2 **BIAS LIGHT**/SH-8A board → ON
 S1 **TEST**/SH-8A board → OFF
 To be measured : B9 ($\frac{1}{T}$ GND)/Extension board
 Trigger : TP4 (H. TRIG)/SG-63A board
 To be adjusted : \odot RV13/SH-8A board
 Specification : 10 ± 2 mV



4-5-2. GREEN PA Frequency Response at high Frequencies Adjustment

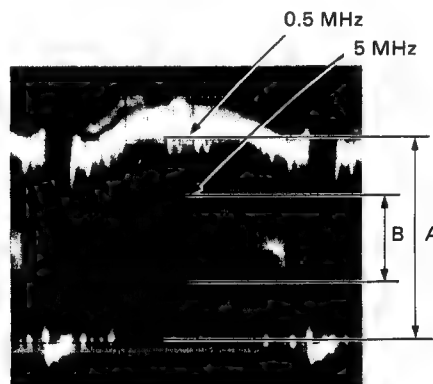
Object : Multiburst chart
 Measuring equipment : Oscilloscope
 Preparation : Remove the shielding case on the PA-37 board
 Trigger : TP4 (H. TRIG)/SG-63A board

1. Adjust the zoom control so that the Multiburst chart frame touches the underscanned picture frame on the monitor.

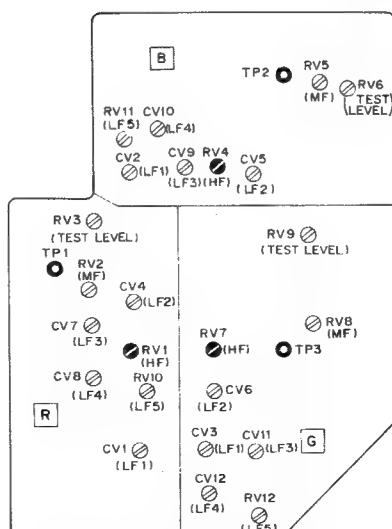
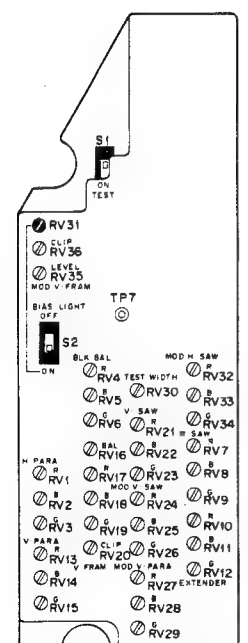


Monitor (Underscanning)

2. Adjust the iris control so that the video level corresponding to the 0.5 MHz at TP3/PA-37 board is 0.4 Vp-p.
3. Maximize the waveform signal amplitude at 5 MHz by focusing of the lens.
4. Repeat Step 2.
5. Adjust the \odot RV7 **HF**/PA-37 board so that the amplitude level at 5 MHz is 0.2 Vp-p.



A = 0.4 Vp-p
 B = 0.2 Vp-p



4-5-3. RED PA Frequency Response at high Frequencies Adjustment

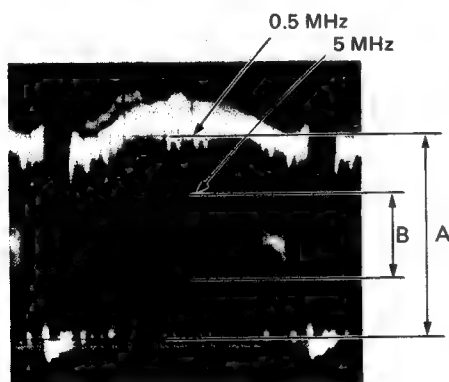
Object : Multiburst chart
 Measuring equipment : Oscilloscope
 Preparation : Remove the shielding case on the PA-37 board.
 Trigger : TP4 (H. TRIG)/SG-63A board

1. Adjust the zoom control so that the Multiburst chart frame touches the underscanned picture frame on the monitor.



Monitor (Underscanning)

2. Adjust the iris control so that the video level corresponding to the 0.5 MHz at TP1/PA-37 board is 0.2 Vp-p.
3. Maximize the waveform signal amplitude at 5 MHz by focusing of the lens.
4. Repeat Step 2.
5. Adjust the RV1 [HF]/PA-37 board so that the amplitude level at 5 MHz is 0.1 Vp-p.



$A = 0.2 \text{ Vp-p}$
 $B = 0.1 \text{ Vp-p}$

4-5-4. BLUE PA Frequency Response at high Frequencies Adjustment

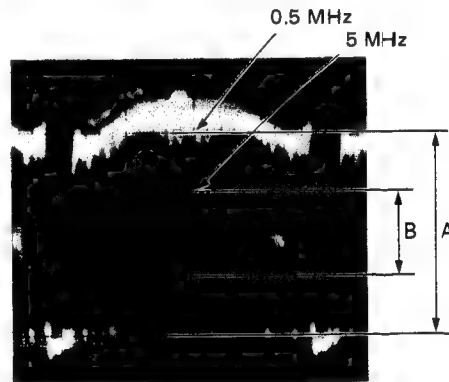
Object : Multiburst chart
 Measuring equipment : Oscilloscope
 Preparation : Remove the shielding case on the PA-37 board.
 Trigger : TP4 (H. TRIG)/SG-63A board

1. Adjust the zoom control so that the Multiburst chart frame touches the underscanned picture frame on the monitor.



Monitor (Underscanning)

2. Adjust the iris control so that the video level corresponding to the 0.5 MHz at TP2/PA-37 board is 0.2 Vp-p.
3. Maximize the waveform signal amplitude at 5 MHz by focusing of the lens.
4. Repeat Step 2.
5. Adjust the RV4 [HF]/PA-37 board so that the amplitude level at 5 MHz is 0.1 Vp-p.



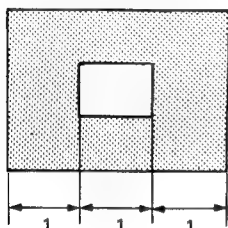
$A = 0.2 \text{ Vp-p}$
 $B = 0.1 \text{ Vp-p}$

4-5-5. GREEN PA Frequency Response at Low and Medium Frequencies Adjustment

Object : White window chart
 Equipment : Oscilloscope
 Preparations : S8 **REC/ENC** → REG
 S7 **G/-G** → G
 S6 **R/B** → OFF } /PR-75 board

1. Shoot the white window chart as shown below.

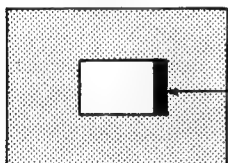
Monitor (Underscanning)



2. Adjust the iris control so that the video level at the TP3/PA-37 board is 0.4 Vp-p.
3. Adj. point:
 - CV3 (LF1)
 - CV6 (LF2)
 - CV11 (LF3)
 - CV12 (LF4)
 - RV12 (LF5)
 - RV8 (MF)
 } /PA-37 board

Adjust: White or black streaking goes not appear on the monitor.

Monitor



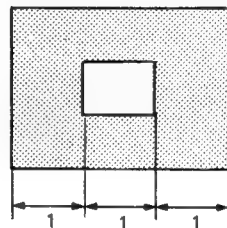
White or black streaking disappearing.

4-5-6. RED PA Frequency Response at Low and Medium Frequencies Adjustment

Object : White window chart
 Equipment : Oscilloscope
 Preparations : S8 **REC/ENC** → REG
 S7 **G/-G** → OFF
 S6 **R/B** → R } /PR-75 board

1. Shoot the white window chart as shown below.

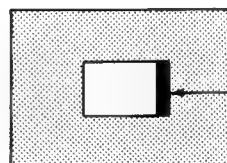
Monitor (Underscanning)



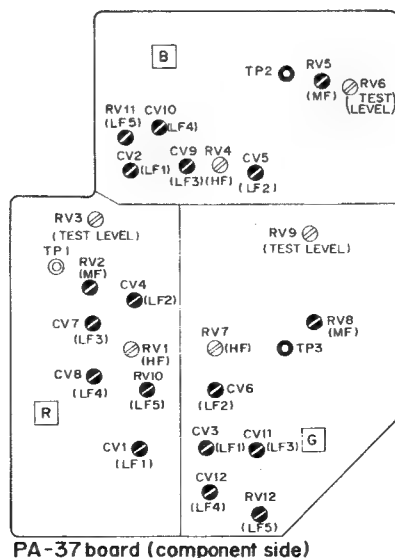
2. Adjust the iris control so that the video level at the TP3/PA-37 board is 0.4 Vp-p.
3. Adj. point:
 - CV1 (LF1)
 - CV4 (LF2)
 - CV7 (LF3)
 - CV8 (LF4)
 - RV10 (LF5)
 - RV2 (MF)
 } /PA-37 board

Adjust: White or black streaking goes not appear on the monitor.

Monitor



White or black streaking disappearing.



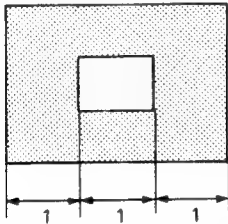
PA-37 board (component side)

4-5-7. BLUE PA Frequency Response at Low and Medium Frequencies Adjustment

Object : White window chart
 Equipment : Oscilloscope
 Preparation : S8 REG/ENC → REG
 S7 G/-G → OFF
 S6 R/B → B } PR-75 board

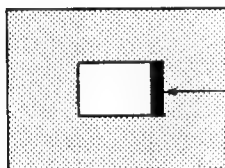
1. Shoot the white window chart as shown below.

Monitor (Underscanning)



2. Adjust the iris control so that the video level the TP3/PA-37 board is 0.4 Vp-p.
3. Adj. point:
 ● CV2 (LF1)
 ● CV5 (LF2)
 ● CV9 (LF3)
 ● CV10 (LF4)
 ● RV11 (LF5)
 ● RV5 (MF)
 } /PA-37 board

Adjust: White and black streaking goes not appear on the monitor.



Monitor

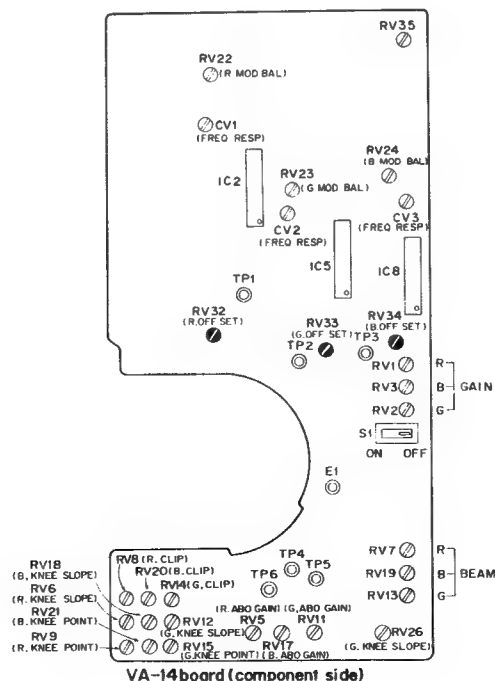
BVP-3A(UC) : Serial No. 10501 and higher
 BVP-3AP(EK) : Serial No. 21001 and higher

DC-OFF SET Adjustment

Lens : Close
 Equipment : Oscilloscope (DC mode)
 To be extended : VA-14 Board
 Trigger : TP4 (H. TRIG)/SG-63A Board

1. Adjust the ● RV33 G OFF SET /VA-14 board so that does not change the DC level of the IC5, 1 Pin/VA-14 board when select the GAIN SW to 0 dB and 18 dB.
2. Adjust the ● RV32 R OFF SET /VA-14 board so that does not change the DC level of the IC2, 1 Pin/VA-14 board when select the GAIN SW to 0 dB and 18 dB.
3. Adjust the ● RV34 B OFF SET /VA-14 board so that does not change the DC level of the IC8, 1 Pin/VA-14 board when select the GAIN SW to 0 dB and 18 dB.

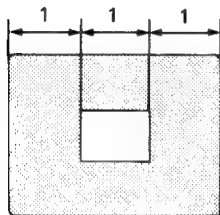
Note: After this adjustment is completed, rest the GAIN Switch to 0 dB.



4-5-8. VA Gain Adjustment

- Note:**
1. Repeatedly adjust the 4-5-8. VA gain adjustment of the 4-5-10. Dynamic range adjustment to obtained the specification.
 2. For the VA gain adjustment, the reflection type chart is highly recommended, and make sure that the white area has 3200°K of color temperature. if the pattern box is used for this adjustment, well maintained pattern box should be used.

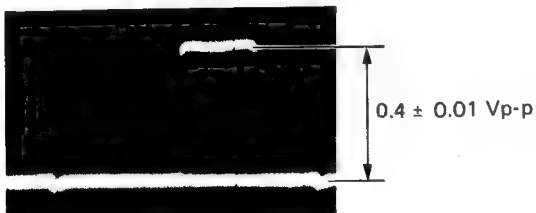
Object : White window chart (3200°K)



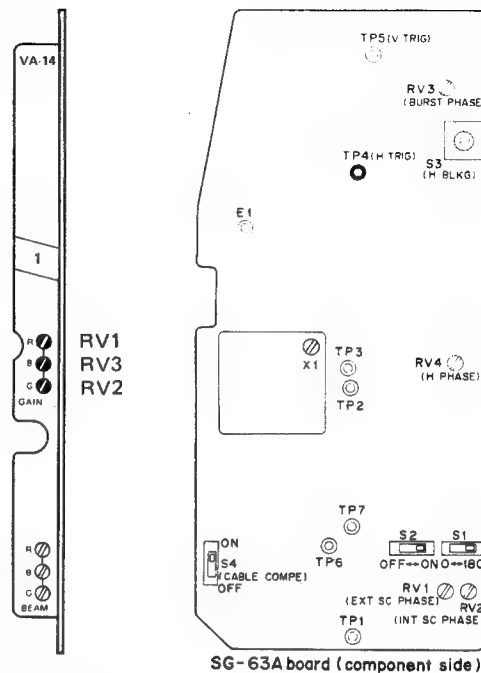
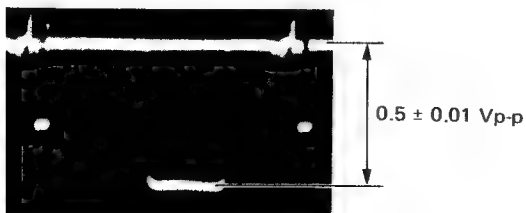
Monitor

Measuring equipment : Oscilloscope
To be extended : VA-14 board
Preparation : Remove the shielding case on the PA-37 board
Trigger : TP4 (H. TRIG)/SG-63A board

1. Adjust the iris control so that the video level at TP3/PA-37 board is 0.4 ± 0.01 Vp-p.



2. RV35/VA-14 board → mechanical center.
3. Adjust the RV2 [G. GAIN]/VA-14 board so that the video level at B5/extension board is 0.5 ± 0.01 Vp-p.
4. Adjust the RV1 [R. GAIN]/VA-14 board so that the video level at B3/extension board is 0.5 ± 0.01 Vp-p.
5. Adjust the RV3 [B. GAIN]/VA-14 board so that the video level at B4/extension board is 0.5 ± 0.01 Vp-p.

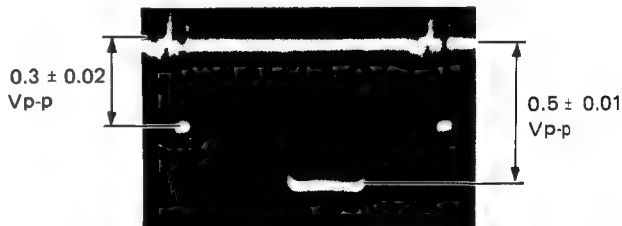


VA-14 board
(panel side)

SG-63A board (component side)

4-5-9. AGC Pulse Level Adjustment

1. Adjust the RV-36 [BF GAIN]/VA-14 board so that the BF level at B5/extension board is 0.5 ± 0.01 Vp-p.

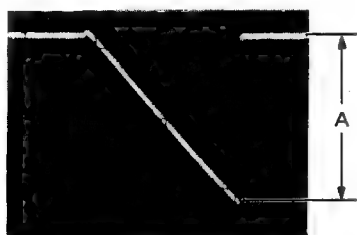


4-5-10. Test Signal Waveform Adjustment

Note: Be sure to carry out 4-5-8. VA Gain Adjustment before this adjustment.

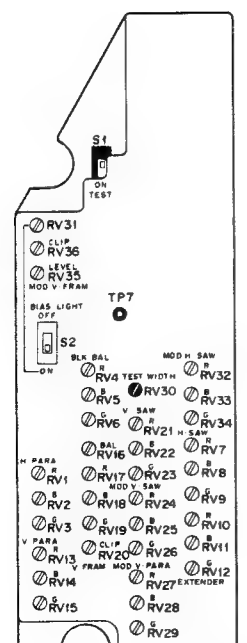
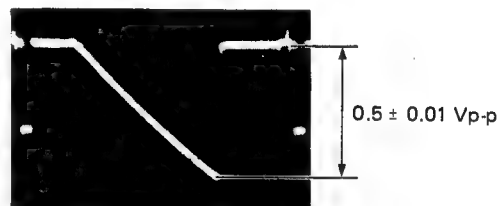
1) Test saw width adjustment

Measuring equipment : Oscilloscope
 Preparation : S1 **TEST**/SH-8A board → ON
 To be measured : TP7/SH-8A board
 To be adjusted : RV30/SH-8A board
 Trigger : TP4 (H. TRIG)/SG-63A board
 Specification : $A = 1.5 \pm 0.1$ Vp-p

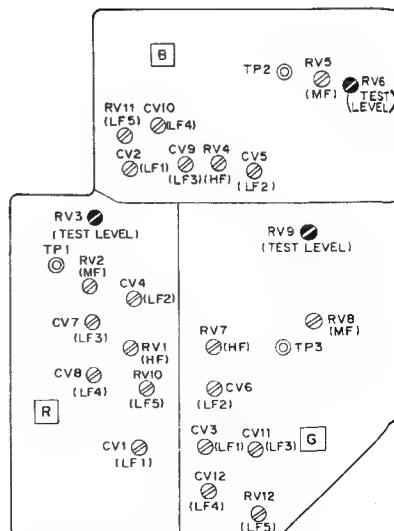


2) Test saw level adjustment

Measuring equipment : Oscilloscope
 To be extended : VA-14 board
 Preparation : S1 **TEST**/SH-8A board → ON
 To be measured : A5 (G)
 A3 (R) } /extension board
 A4 (B)
 Trigger : TP4 (H. TRIG)/SG-63A board
 To be adjusted : RV9 (G)
 RV3 (R) } /PA-37 board
 RV6 (B)
 Specification : 0.5 ± 0.01 Vp-p



SH-8A board(component side)



PA-37 board (component side)

4. ALIGNMENT

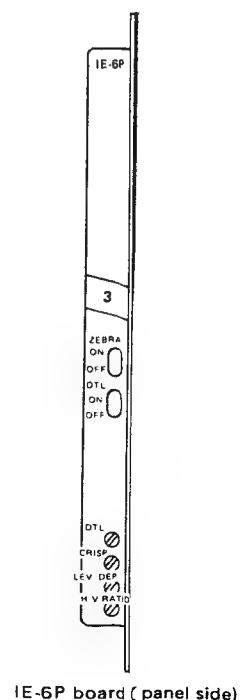
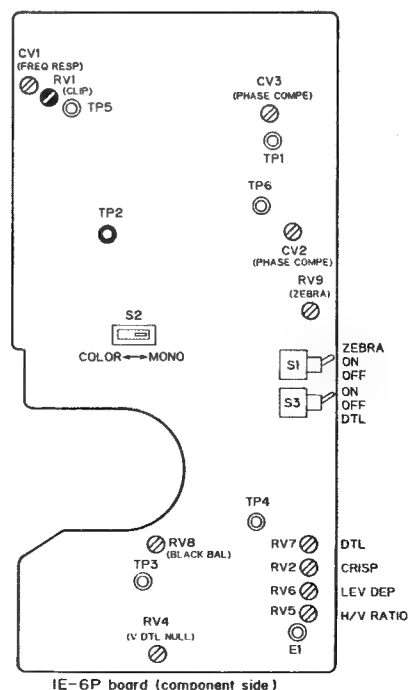
Measuring equipment : Oscilloscope
To be extended : VA-14 board
Preparations : S1 **TEST**/SH-8A board → ON
Trigger : TP4 (H. TRIG)/SG-63A board

-

- Note:** This adjustment, 4-5-8. VA Gain adjustment and 4-5-9. TEST Signal Waveform Adjustment affect each other, so repeat adjustments until their specifications are satisfied.

Measuring equipment : Oscilloscope
To be extended : IE-6P board
Preparations : S1 **TEST**/SH-8A board → ON
Trigger : TP4 (H. TRIG)/SG-63A board

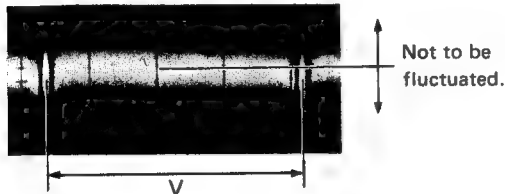
-



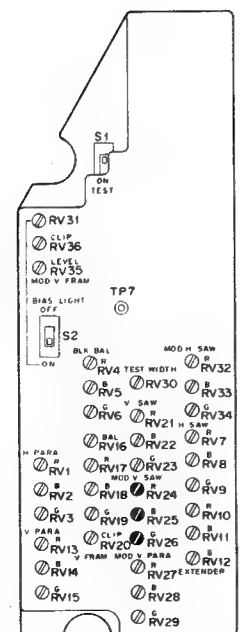
4-5-13. Modulator Balance Adjustment

Lens : Close
 Measuring equipment : Oscilloscope
 To be extended : VA-14 board
 Trigger : TP5 (V. TRIG)/SG-63A board

1. Adjust the \odot RV23/VA-14 board so that the video level at B5/extension board might not change when the \odot RV26 G.MOD V.SAW/SH-8A board is turned clockwise or counterclockwise.
2. Adjust the \odot RV22/VA-14 board so that the video level at B3/extension board might not change when the \odot RV24 R.MOD V.SAW/SH-8A board is turned clockwise or counterclockwise.
3. Adjust the \odot RV24/VA-14 board so that the video level at B4/extension board might not change when the \odot RV25 B.MOD V.SAW/SH-8A board is turned clockwise or counterclockwise.



Note: After this adjustment is completed, be sure to carry out 4-5-21. White Shading Adjustment.

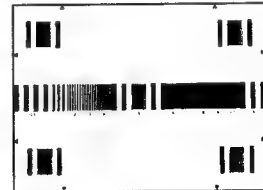


SH-8A board(component side)

4-5-14. VA Frequency Response Adjustment

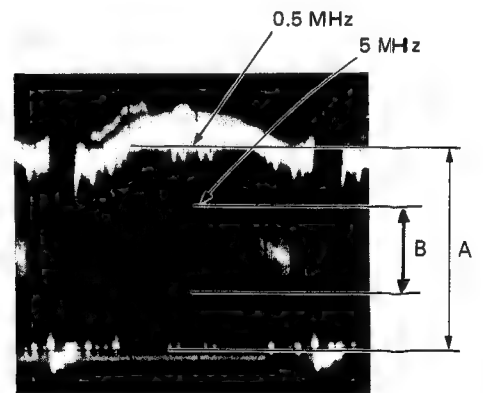
Object : Multiburst chart
 Measuring equipment : Oscilloscope
 To be extended : VA-14 board
 Trigger : TP4 (H. TRIG)/SG-63A board

1. Adjust the zoom control so that the Multiburst chart frame touches the underscanned picture frame on the monitor.



Monitor (Underscanning)

2. Adjust the iris control so that the video level corresponding to 0.5 MHz at B9/extension board is 0.4 Vp-p.
3. Maximize the waveform signal amplitude at 5 MHz by focusing of the lens.
4. Adjust the \odot CV2/VA-14 board so that the ratio between the amplitude of 5 MHz and 0.5 MHz at B5 (output)/extension board is the same as that at B9 (input)/extension board.
5. Adjust the \odot CV1/VA-14 board so that the ratio between the amplitude of 5 MHz and 0.5 MHz at B3 (output)/extension board is the same as that at B7 (input)/extension board.
6. Adjust the \odot CV3/VA-14 board so that the ratio between the amplitude of 5 MHz and 0.5 MHz at B4 (output)/extension board is the same as that at A11 (input)/extension board.



4-5-15. Gamma Balance Adjustment

Note: Be sure to carry out 4-5-9. TEST Signal Waveform Adjustment before this adjustment.







Measuring equipment : Oscilloscope

To be extended : PR-75 board

Preparations : S1 **TEST** /SH-8A board → ON

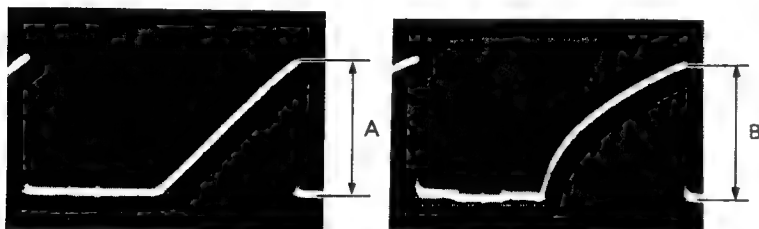
S1 WHT CLIP /PR-75 board → OFF

Trigger : TP4 (H. TRIG)/SG-63A board

1. Adjust the  RV11/PR-75 board so that the white peak level of the test signal waveform at B9/extension board does not change while setting S4 /PR-75 board at ON or OFF.
2. Adjust the  RV1/PR-75 board so that the white peak level of the test signal waveform at B8/extension board does not change while setting S3 /PR-75 board at ON or OFF.
3. Adjust the  RV21/PR-75 board so that the white peak level of the test signal waveform at B11/extension board does not change while setting S5 /PR-75 board at ON or OFF.

$\gamma \cdot \text{SW} : \text{OFF}$

$\gamma \cdot \text{SW} : \text{ON}$


$$A = B$$





4-5-16. Carrier Balance Adjustment

Measuring equipment : Vectorscope (MAX GAIN)


To be extended : EN-33A board

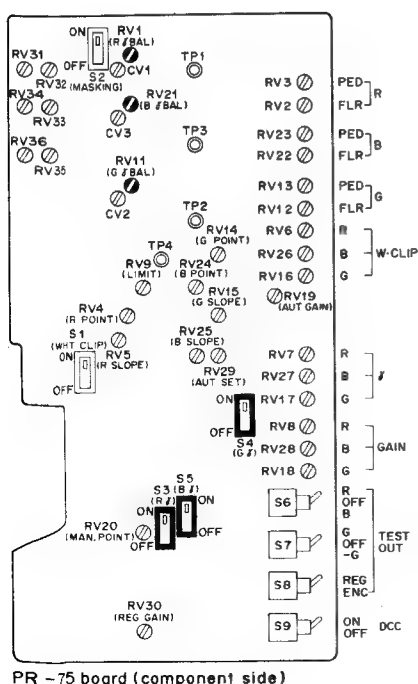
Preparation : OUTPUT switch → BARS

S3 BARS/EN-33A board → EBU

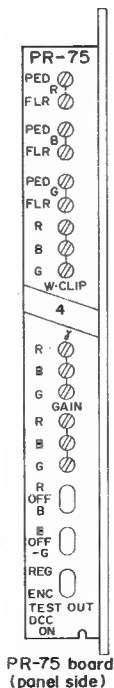
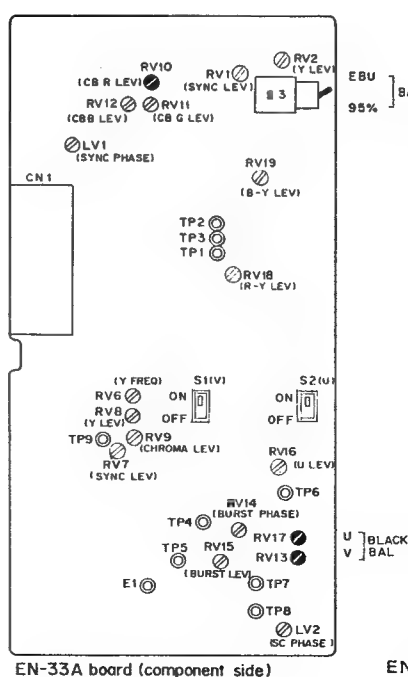
- Center the black beam spot on the vectorscope using both  RV13  and  RV17 /EN-33A board.



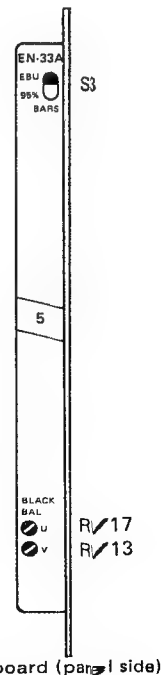
Note: When black spots cannot be discriminated due to several beam spots, turn the  RV10/EN-33A board. The black beam spots cannot be shifted. In this case, after adjustment is completed, perform the “Color Bar Adjustment in the encoder system adjustment”



PR -75 board (component side)

PR-75 board
(panel side)

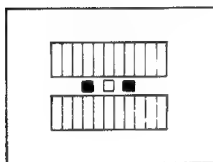
EN-33A board (component side)



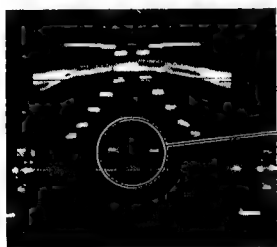
EN-33A board (panel side)

4-5-17. Flare Adjustment

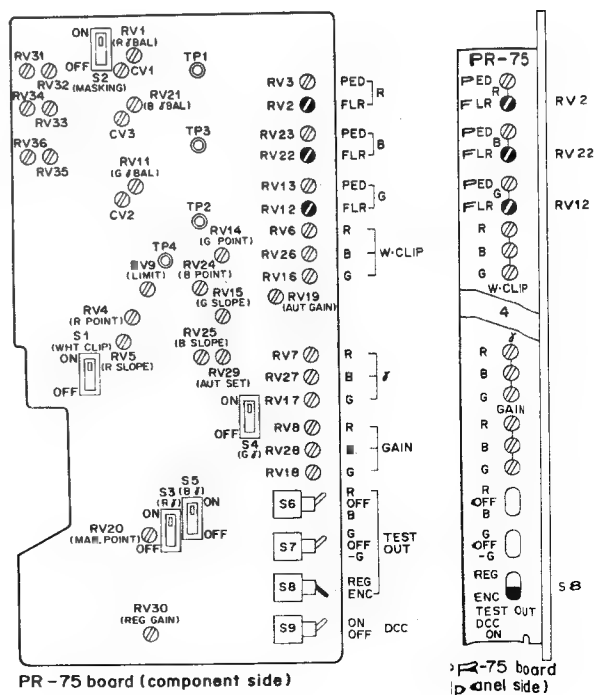
Object : Grayscale chart
 Measuring equipment : Waveform monitor
 To be extended : PR-75 board
 Preparations : S8 **REG/ENC** → ENC
 RV22 **B.FLR** } /PR-75
 → Fully counterclockwise ⚙ board
 OUTPUT switch → CAM
 S1 **TEST**/SH-8A board → OFF As
 shown below, stick non-reflex and non-
 photoconductive cloth (e.g. velvet etc.)
 on the grayscale chart as a reference of
 the black level.



1. Adjust the zoom control so that the grayscale chart frame touches the undescanned picture frame on the monitor.
2. Open the iris control by 1 position from the position which the video level at the TEST OUT terminal is set at 700 mV.
3. Adjust the RV2 **R.FLR** and RV12 **G.FLR**/PR-75 board so that the waveform amplitude of the black level is minimized.



Make the amplitude level minimum.

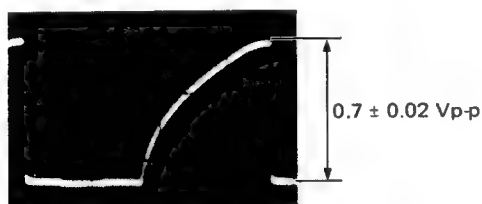


4-5-18. PR Gain Adjustment

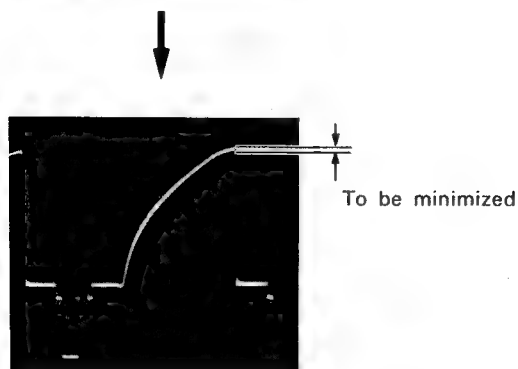
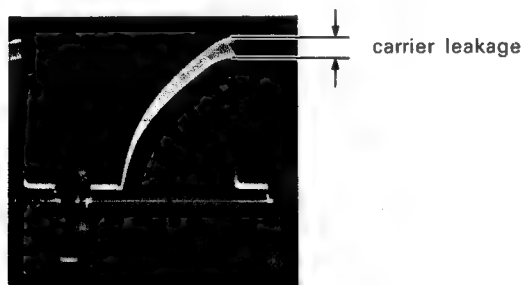
Note: Be sure to carry out 4-5-14. Gamma Balance Adjustment before this adjustment.

Measuring equipment : Oscilloscope, Waveform monitor
 To be extended : PR-75 board
 Preparations : S1 **WHT CLIP** → OFF
 S3 **R_y** → ON
 S4 **G_y** → ON
 S5 **B_y** → ON
 S1 **TEST**/SH-8A board → ON
 Trigger : TP4 (H. TRIG)/SG-63A board

1. Adjust the \odot RV18 **G. GAIN**/PR-75 board so that the video level at B9/extension board is 0.7 ± 0.02 Vp-p.



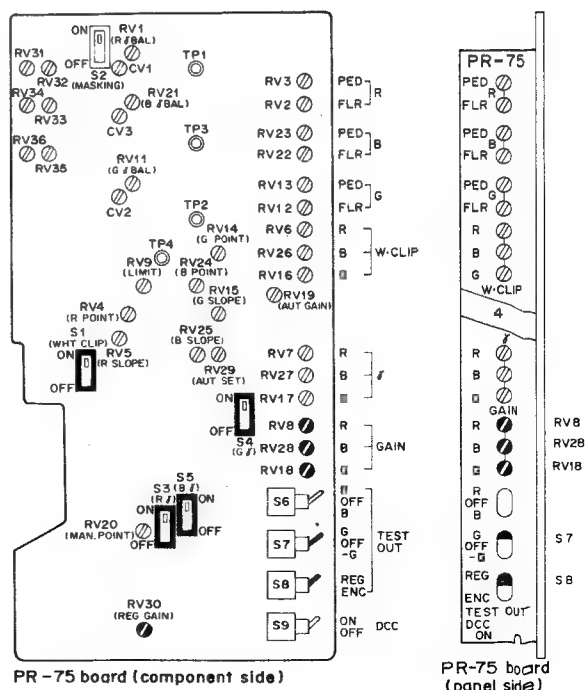
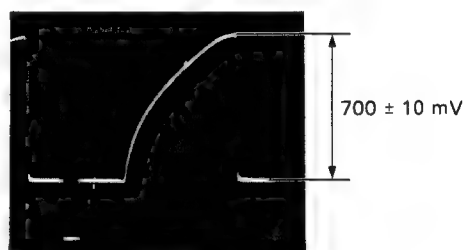
2. S8 **REG/ENC**/PR-75 board → ENC
3. Adjust the \odot RV8 **R. GAIN** and \odot RV28 **B. GAIN**/PR-75 board so that the carrier leakage at the peak of the test signal waveform at the TEST OUT terminal is minimized.



4-5-19. Registration Video Gain Adjustment

Note: Be sure to carry out 4-5-17. PR Gain Adjustment before this adjustment.

Measuring equipment : Waveform monitor
 To be extended : PR-75 board
 Preparations : S1 **WHT CLIP** → OFF
 S8 **REG/ENC** → REG
 S7 **G/-G** → G
 S6 **R/G** → OFF
 To be measured : TEST OUT terminal
 To be adjusted : \odot RV30/PR-75 board
 Specification : 700 ± 10 mV



4-5-20. EN Y Level Adjustment

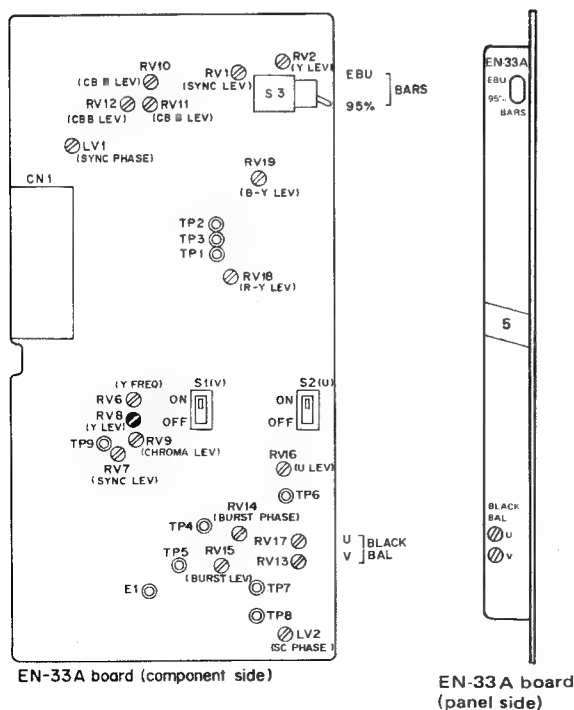
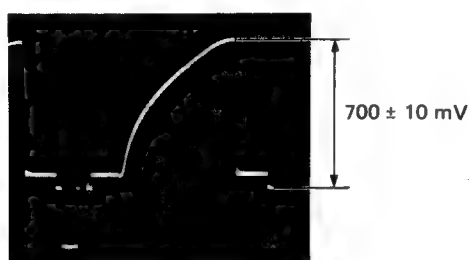
Note: Be sure to carry out 4-5-17. PR Gain Adjustment before this adjustment.

Measuring equipment : Waveform monitor

To be extended : EN-33A board

Preparation : S1 **TEST**/SH-8A board → ON
 S1 **WHT CLIP** → OFF
 S8 **REG/ENC** → ENC } /PR-75 board

Adjust the **RV8/EN-33A** so that the peak level of the test signal waveform at the TEST OUT terminal is 700 ± 10 mV.

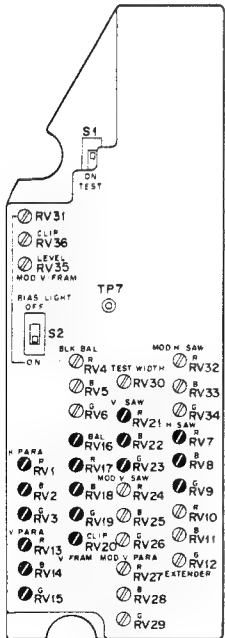


4-5-21. BLACK Shading Adjustment

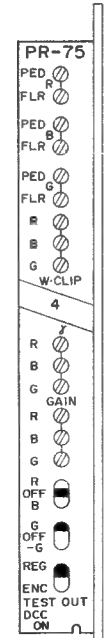
- Lens : Close
- Measuring equipment : Waveform monitor
- Preparations : GAIN switch → 18 dB
S8 REG/ENC//PR-75 board → REG
S1 TEST//SH-8A board → OFF
- Adjustment : Adjust the RVs so that all waveforms are flat. The following table shows the corresponding RVs and the symptoms of shading.

	Switch setting on the PR-75 board	Adjusting point on the SH-8A board						
		H·SAW	V·SAW	H·PARA	V·PARA	V·FRAM	V·FRAM BAL	V·FRAM CLIP
G	S7 G/-G → G S6 R/B → OFF	● RV9	● RV23	● RV3	● RV15	● RV19	● RV16	● RV20
R	S7 G/-G → OFF S6 R/B → R	● RV7	● RV21	● RV1	● RV13	● RV17		
B	S7 G/-G → OFF S6 R/B → B	● RV8	● RV22	● RV2	● RV14	● RV18		
TEST OUT								

Note: After this adjustment is completed, reset the GAIN switch to 0 dB.



SH-8A board(component side)



PR-75 board (panel side)

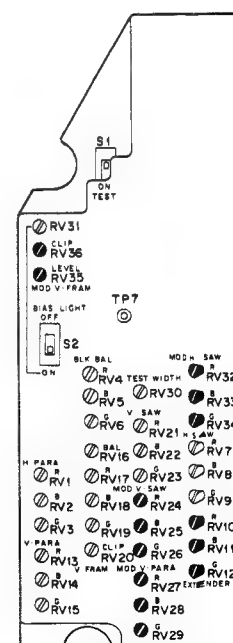
4-5-22. White Shading Adjustment

Object : White window chart
 Measuring equipment : Waveform monitor
 Preparations : S1 **WHT CLIP** → OFF } /PR-75
 S8 **REG/ENC** → REG } board

1. Adjust the zoom control so that the white window frame touches the underscanned picture frame on the monitor.
2. Adjust the iris control so that the video level at the TEST OUT terminal is 700 mV.
3. Adjust RVs so that all waveforms are flat, following table is shown the corresponding RVs and the symptoms of shading.

Notes: The EXT MOD SAW adjustment can be performed when the lens with an extender is used.
 Set the lens EXT lever at the X2 position and adjust the iris control so that the video level at the TEST OUT terminal is 700 mV, and then perform the EXT MOD SAW adjustment.
 After the adjustment is completed, reset the EXT lever at the X1 position.

	Switch setting on the PR-75 board	Adjusting point on the SH-8A board			
		MOD H·SAW	MOD V·SAW	MOD V·PARA	EXT MOD SAW (V)
G	S7 G/-G → G S6 R/B → OFF	RV34	RV26	RV29	RV12
R	S7 G/-G → OFF S6 R/B → R	RV32	RV24	RV27	RV10
B	S7 G/-G → OFF S6 R/B → B	RV33	RV25	RV28	RV11
TEST OUT					
		CLIP		MOD V·FRAME	
S8 REG/ENC → ENC		RV36	RV35		
TEST OUT					



SH-8A board(component side)

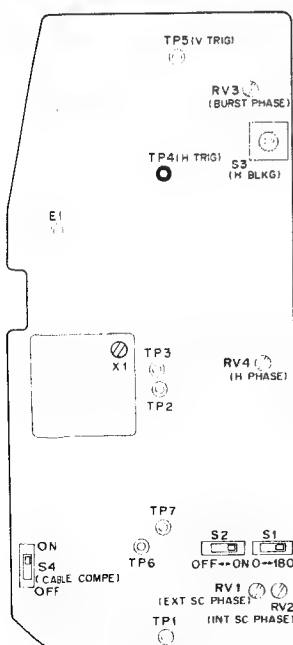
4-5-23. Black Balance and Pedestal Adjustment

Lens : Close
 Measuring equipment : Waveform monitor,
 Vectorscope (MAX GAIN)
 To be extended : VA-14 board
 Preparations : Reset the S4/AT-16 board at the
 OP position after it is set at PRST.
 S8 **REG/ENC** → REG
 S7 **G/-G** → G
 S6 **R/B** → OFF
 Pedestal → mechanical center
 Trigger : TP4 (H. TRIG)/SG-63A board

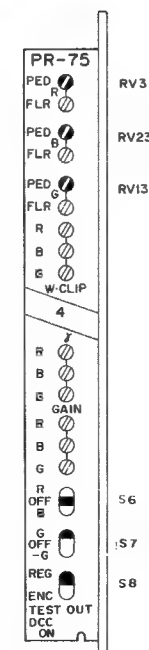
- RV4 (R. BAL)/SH-8A board
 RV5 (B. BAL) → Fully counterclockwise
- When the GAIN switch is changed over from 0 dB to 9 dB and 18 dB, adjust the RV6/SH-8A board so that the black level at B5/Extension board does not change.



- Adjust the RV13 **G. PED**/PR-75 board so that the pedestal level is 20 mV.



SG-63A board (component side)

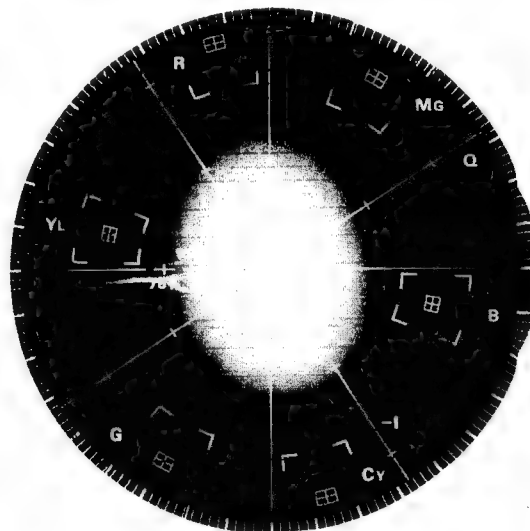


PR-75 board (panel side)

- S8 **REG/ENC**/PR-75 board → ENC
- Adjust the RV3 **R. PED** and RV23 **B. PED**/PR-75 board so that the beam spot is in the center of the vectorscope.



- GAIN switch → 18 dB.
- Finely adjust the RV4 and RV5/SH-8A board so that the beam spot is in the center of the vectorscope.



- Repeat Step 1 through Step 7 until both specifications are satisfied.
- GAIN switch → 0 dB

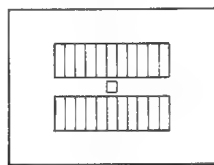
4-5-24. Gamma Correction Adjustment

Object : Grayscale chart (11 step)
 Measuring equipment : Waveform monitor
 To be extended : PR-75 board

Preparations : S1 **WHT CLIP** → OFF
 S8 **REG/ENC** → REG
 S7 **G/-G** → G
 S6 **R/B** → OFF
 S3 **R_y** → ON
 S4 **G_y** → ON
 S5 **B_y** → ON

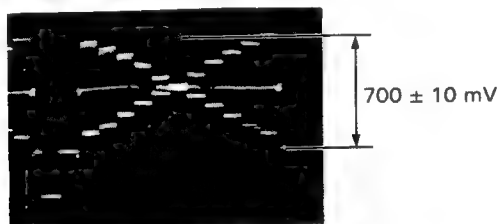
/PR-75 board

1. Adjust the zoom control so that the grayscale chart frame touches the underscanned picture frame on the monitor.

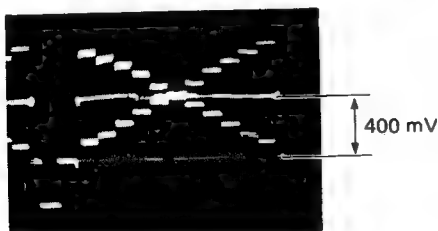


Monitor

2. Adjust the iris control so that the peak level at the TEST OUT terminal is 700 ± 10 mV.

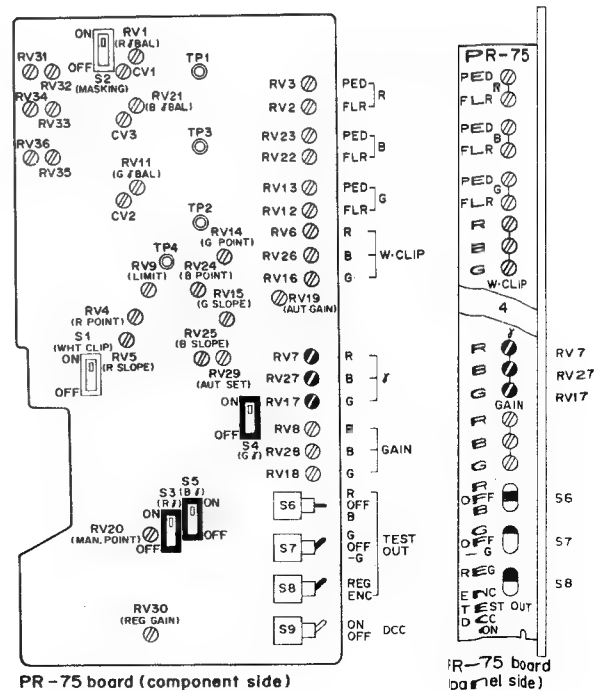
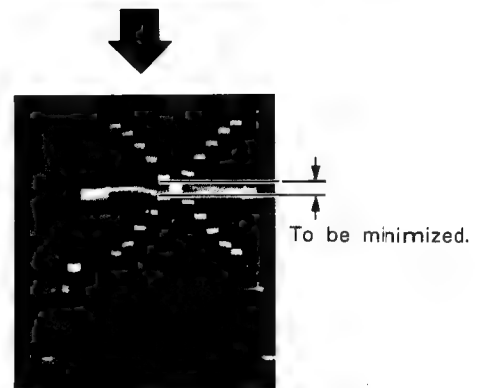
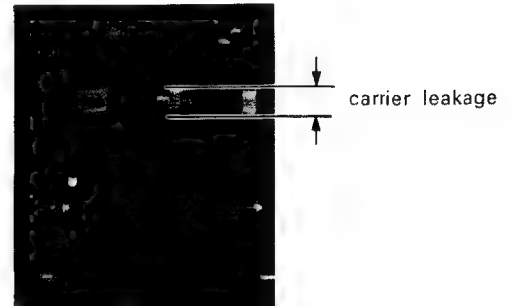


3. Adjust the RV17 **G_y**/PR-75 board so that the cross point on the waveform signal at the TEST OUT terminal is 400 mV.



4. S8 **REG/ENC**/PR-75 board → ENC.

5. Adjust the RV7 **R_y** and RV27 **B_y**/PR-75 board so that the carrier leakage at the cross point on the waveform signal is minimized.



4-5-25. Knee, White Clip Adjustment

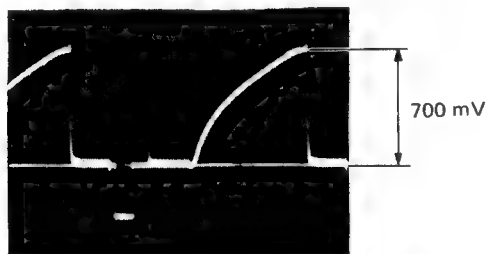
Measuring equipment : Waveform monitor

To be extended : PR-75 board

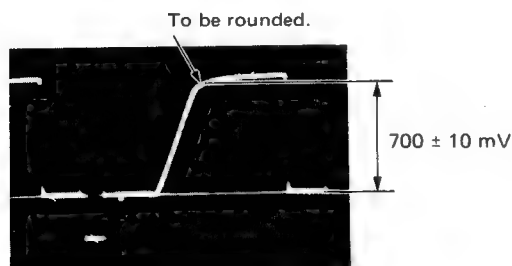
Preparations : S1 **TEST**/SH-8A board → ON
 S3 **Ry** → ON
 S4 **Gy** → ON
 S5 **By** → ON
 S1 **WHT CLIP** → ON
 S8 **REG/ENC** → REG
 S7 **G/-G** → G
 S6 **R/B** → OFF
 S9 **R/B** → ON
 RV16 **G W. CLIP** → Fully counterclockwise
 RV6 **R W. CLIP** → Fully counterclockwise
 RV26 **B W. CLIP** → Fully counterclockwise
 RV15 → Fully clockwise
 RV5 → Fully clockwise
 RV25 → Fully clockwise
 GAIN switch → 0 dB
 Trigger : TP4 (H. TRIG)/SG-63A board

* MANUAL KNEE WHITE CLIP ADJUSTMENT*

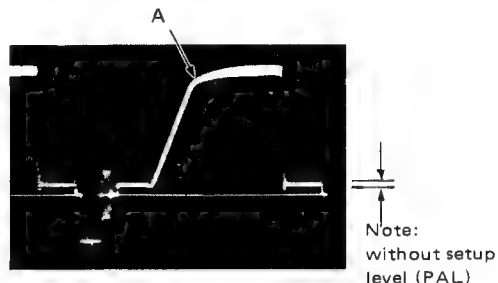
1. Adjust the RV20 (MAN. POINT)/PR-75 board turning from fully counterclockwise to fully clockwise slowly so that the peak level at the waveform signal is a start point at 700 mV.



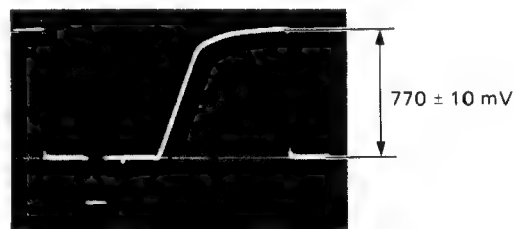
2. GAIN switch → 9 dB
3. Adjust the RV14/PR-75 board so that the knee point at test signal waveform is 700 mV.



4. S8 **REG/ENC**/PR-75 board → ENC
5. Adjust both RV4 and RV24/PR-75 board so that the carrier leakage at the knee point (portion A) on the test waveform signal is minimized.



6. S8 **REG/ENC**/PR-75 board → REG
7. Adjust the RV15/PR-75 board so that the peak level at the waveform signal is 770 ± 10 mV.



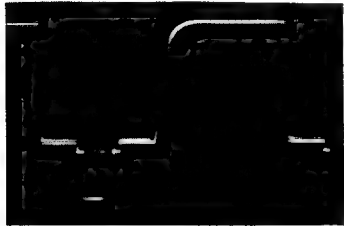
8. S8 **REG/ENC**/PR-75 board → ENC
9. Adjust both RV5 and RV25/PR-75 board so that the carrier leakage at the TEST OUT waveform signal is minimized.



10. GAIN switch → 18 dB
11. Adjust the RV16 **G W. CLIP**/PR-75 board so that the video level at the TEST OUT terminal is 750 ± 10 mV.



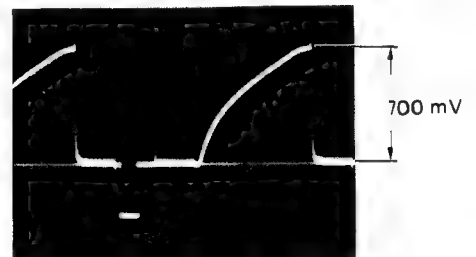
12. S8 **REG/ENC**/PR-75 board → ENC.
13. Adjust both ☒ RV6 **R W. CLIP** and ☒ RV26 **B W. CLIP**/PR-75 board so that the carrier leakage at the TEST OUT waveform signal is minimized.



AUTO KNEE WHITE CLIP ADJUSTMENT

14. S8 **REG/ENC** → REG
 S7 **G/-G** → G
 S6 **R/B** → OFF
 S9 **DCC** → ON
☒ RV9 (LIMIT) → Fully counterclockwise
☒ RV29 (AUTO SET) → mechanical center
 GAIN switch → 0 dB
15. Adjust the ☒ RV19 (AUTO GAIN)/PR-75 board turning from fully clockwise to fully counterclockwise slowly so that the peak level at the waveform signal is a start point at 700 mV.

/PR-75 board

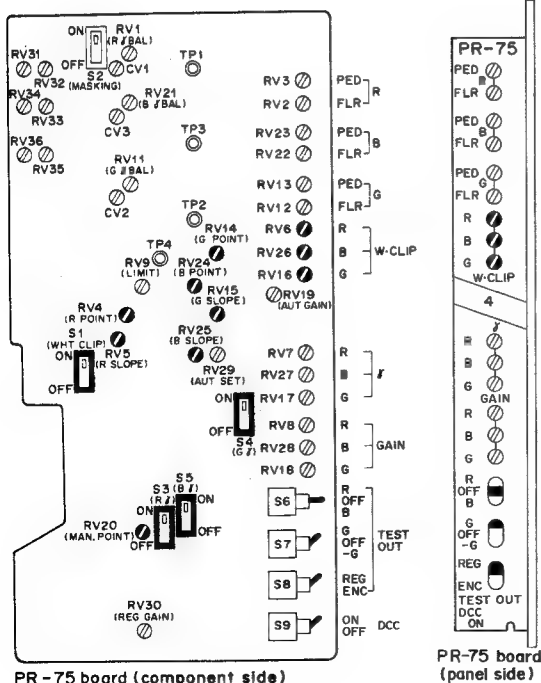
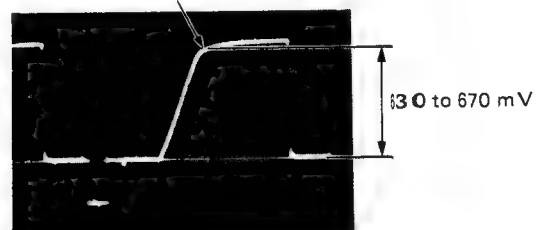


16. Adjust the ☒ RV29 (AUTO SET)/PR-75 board so that the peak level of test waveform signal at TP4/PR-75 board is 0.15 ± 0.01 Vp-p.

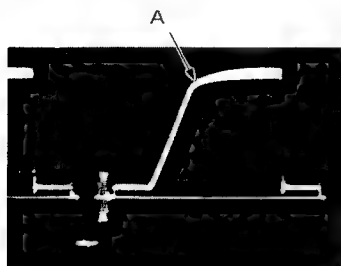


17. GAIN switch → 9 dB
18. Adjust the ☒ RV14/PR-75 board so that the knee point at test signal waveform is 630 to 670 mV.

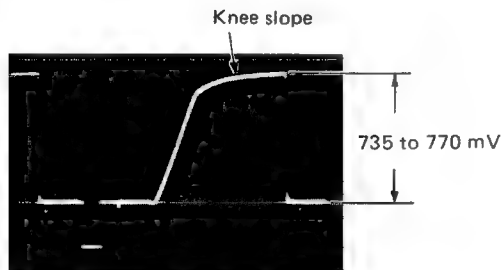
To be rounded.



19. S8 **REG/ENC** /PR-75 board →ENC
20. Adjust both **RV4** and **RV24**/PR-75 board so that the carrier leakage at the knee point (portion A) on the test waveform signal is minimized.



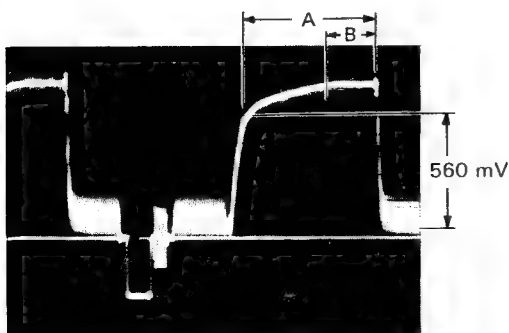
21. S8 **REG/ENC** /PR-75 board →REG
22. Adjust the **RV15**/PR-75 board so that the peak level at the waveform signal is 735 to 770 mV. Be sure that the knee slope (portion A) is a straight line as possible.



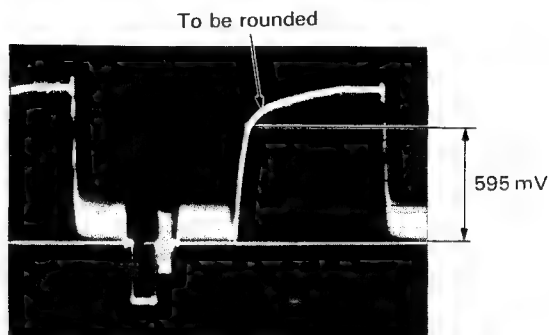
23. S8 **REG/ENC** /PR-75 board →ENC
24. Adjust both **RV5** and **RV25**/PR-75 board so that the carrier leakage at the TEST OUT waveform signal is minimized.



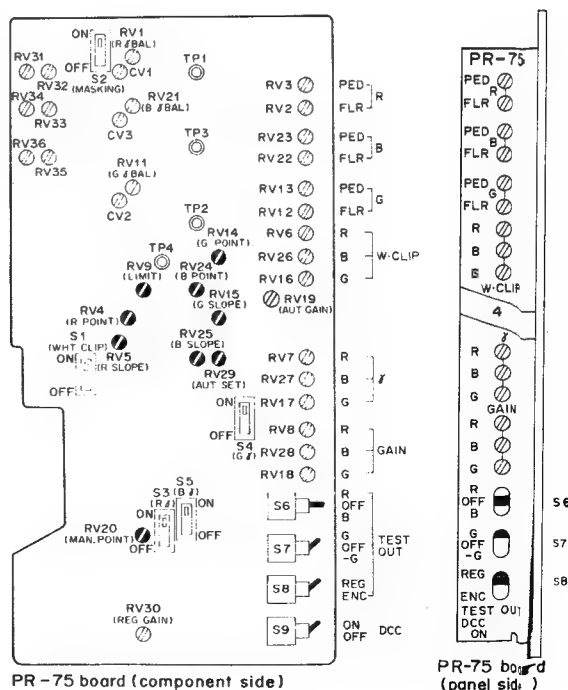
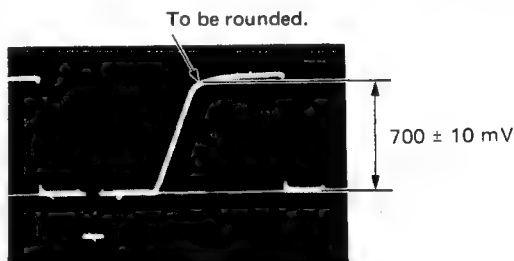
25. GAIN switch →18 dB
26. Adjust Steps 17 to 23 repeatedly, so that the knee point on the test waveform signal is 560 mV and B/A $\cong 1/3$.



27. Adjust the **RV9** (LIMIT)/PR-75 board so that the knee point on the test waveform signal is 595 mV.



28. GAIN switch →9 dB
S8 **REG/ENC** /PR-75 board →REG
S9 **DCC** /PR-75 board → OFF
29. Adjust the **RV20** (MAN. POINT)/PR-75 board so that the knee point on the test waveform signal is 700 ± 10 mV.



4-5-26. Color Bar Adjustment

Note: Be sure to carry out 4-5-19. EN Y Level Adjustment before this adjustment.

Measuring equipment: Waveform monitor

To be extended : EN-33A board

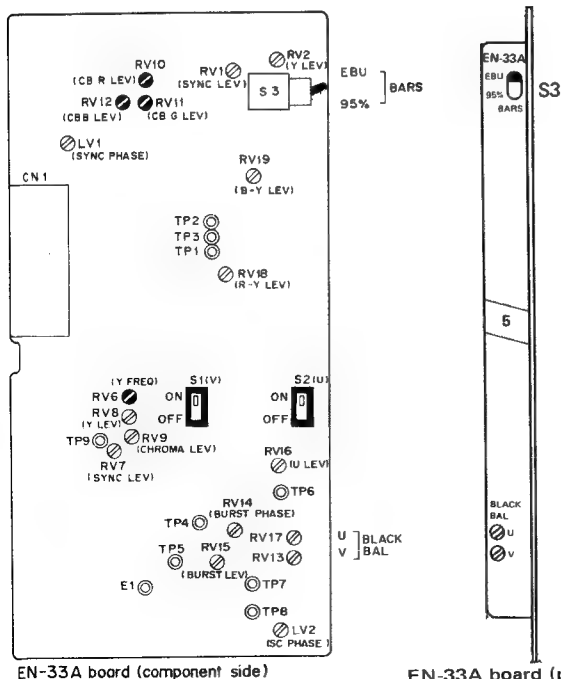
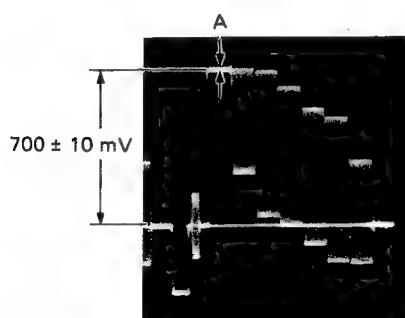
Preparations : OUTPUT switch → BARS

S3 **BARS** /EN-33A board → EBU

S8 **REG/ENC** /PR-75 board → ENC

To be measured : TEST OUT terminal

1. Adjust the \odot RV10, \odot RV11 and \odot RV12/EN-33A board so that the portion A at the TEST OUT waveform signal is 700 ± 10 mV and the carrier leakage is minimized.



4-5-27. EN Frequency Response Adjustment

Object : Multiburst chart

Measuring equipment: Oscilloscope, Waveform monitor

To be extended : EN-33A board

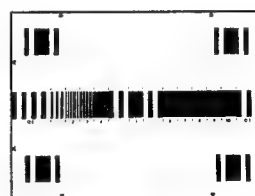
Preparations : S1 ☒ → OFF } /EN-33A board

S2 U → OFF

S8 REG/ENC/PR-75 board → ENC

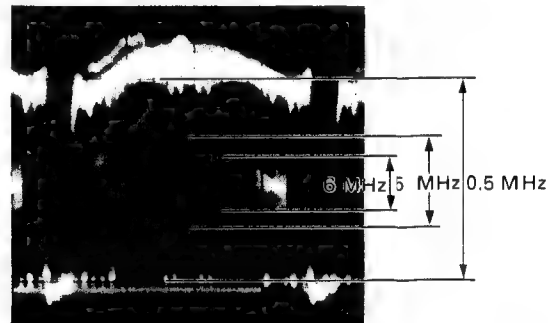
Trigger : TP4 (H. TRIG)/SG-63A board

1. Adjust the zoom control so that the Multiburst chart frame touches the underscanned picture frame on the monitor.

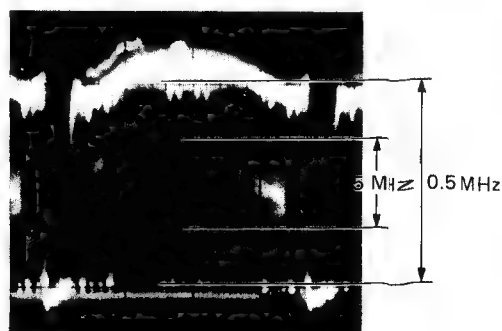


Monitor (Underscanning)

2. Adjust the iris control so that the video level corresponding to 0.5 MHz at the TEST OUT terminal is 700 mV. And adjust the focus control so that the waveform signal amplitude at both 5 MHz and 6 MHz are maximized.



3. Adjust the \odot RV6/EN-33A board so that the ratio between the amplitude of 5 MHz and 0.5 MHz at the TEST OUT terminal is same as that at A9/extension board.



Note: After adjustment, set both S1 ☒ and S2 ☐ /EN-33A board at ON.

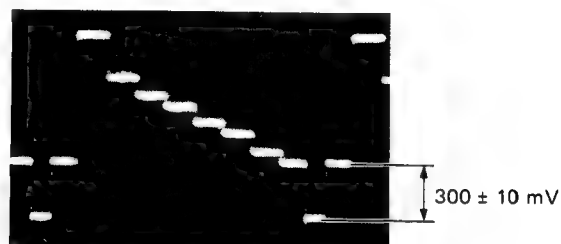
4-5-28. EN SYNC Adjustment

Lens : Close
 Measuring equipment: Waveform monitor
 To be extended : EN-33A board
 To be measured : TEST OUT terminal
 To be adjusted : \odot RV7/EN-33A board
 Specification : 300 ± 10 mV



4-5-30. VTR SYNC Adjustment

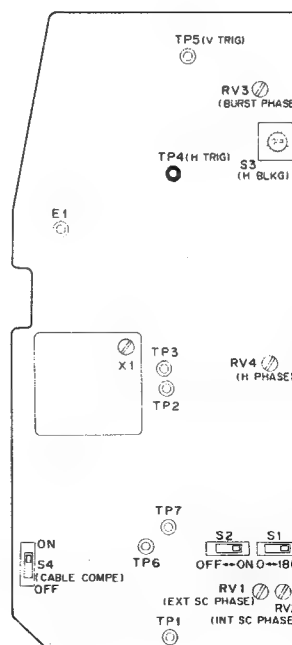
Lens : Close
 Measuring equipment: Oscilloscope
 To be extended : EN-33A board
 To be measured : B13 (∇ GND)/extension board
 Trigger : TP4 (H. TRIG)/SG-63A board
 To be adjusted : \odot RV1/EN-33A board
 Specification : $300 \text{ mV} \pm 10 \text{ mV}$



4-5-29. VTR Y Adjustment

Measuring equipment: Oscilloscope
 To be extended : EN-33A board
 Preparations : OUTPUT switch \rightarrow BARS
 S3 **BARS** /EN-33A board \rightarrow EBU
 To be measured : B13 (∇ GND)/extension board
 Trigger : TP4 (H. TRIG)/SG-63A board

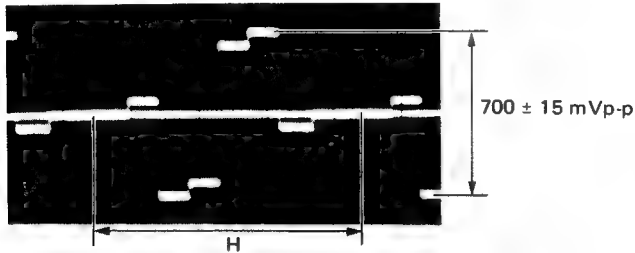
1. Adjust the \odot RV2/EN-33A board so that the waveform signal level is 700 ± 10 mV.



SG-63A board (component side)

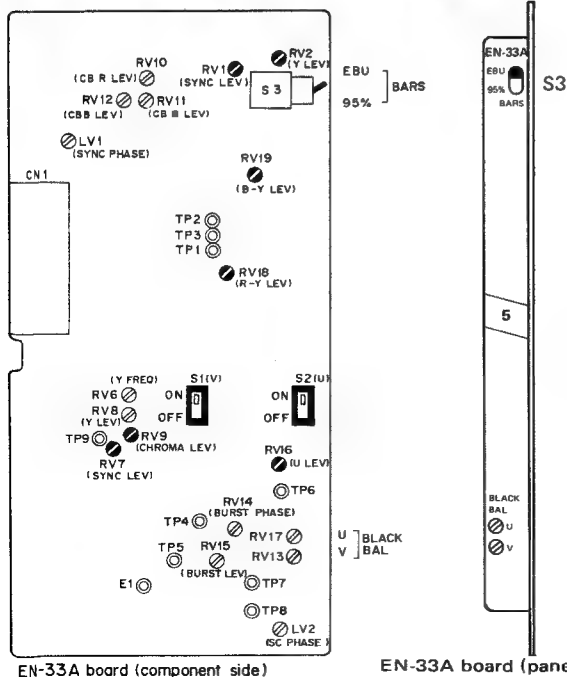
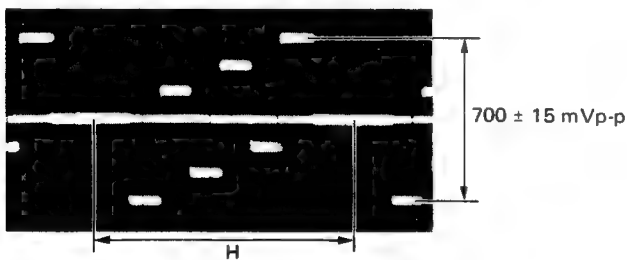
4-5-31. VTR R-Y Gain Adjustment

Measuring equipment: Oscilloscope
 To be extended : EN-33A board
 Preparation : OUTPUT switch → BARS
 To be measured : A17 (≠ GND)/extension board
 Trigger : TP4 (H. TRIG)/SG-63A board
 To be adjusted : Ⓢ RV18/EN-33A board
 Specification : 700 ± 15 mVp-p



4-5-32. VTR B-Y Gain Adjustment

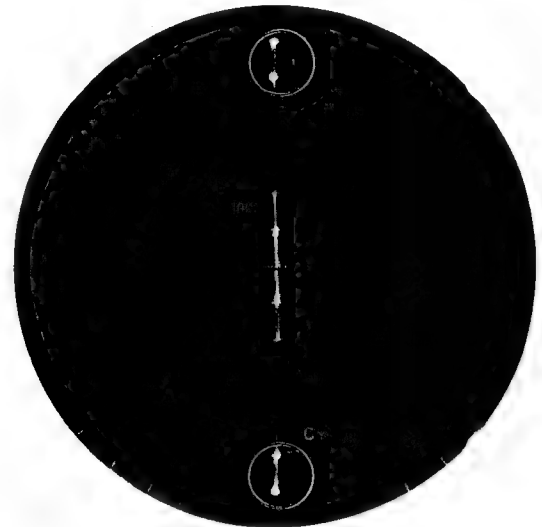
Measuring equipment: Oscilloscope
 To be extended : EN-33A board
 Preparation : OUTPUT switch → BARS
 To be measured : A14 (≠ GND)/extension board
 Trigger : TP4 (H. TRIG)/SG-63A board
 To be adjusted : Ⓢ RV19/EN-33A board
 Specification : 700 ± 15 mVp-p



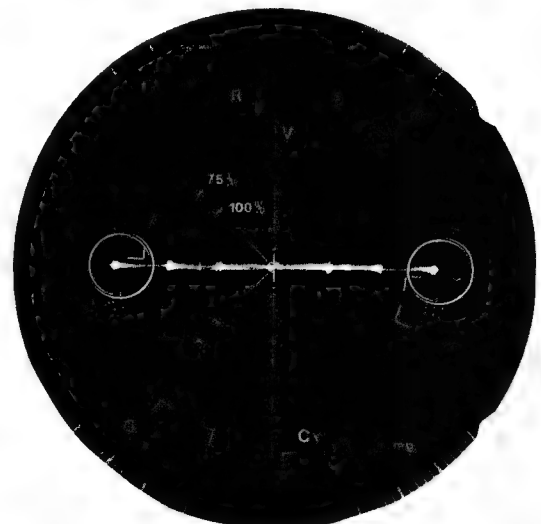
4-5-33. V.U Gain Adjustment

Measuring equipment: Vectorscope
 To be extended : EN-33A board
 Preparation : OUTPUT switch → BARS
 To be measured : TEST OUT terminal

1. S1 ☒ → ON
 S2 ☒ → OFF } /EN-33A board
2. Adjust the PHASE control of the vectorscope so that the V signal is overlapped with V axis on the vectorscope.
3. Adjust the Ⓢ RV9/EN-33A board so that the beam spots at both ends of the V signal are overlapped with the scale of the vectorscope.



4. S1 ☒ → OFF
 S2 ☒ → ON } /EN-33A board
5. Adjust the PHASE control of the vectorscope so that the U signal is overlapped with U axis on the vectorscope.
6. Adjust the Ⓢ RV16/EN-33A board so that the beam spots at both ends of the U signal are overlapped with the scale of the vectorscope.



Note: After this adjustment is completed, set the ☒ /EN-33A board at ON.

4. ALIGNMENT

To be extended : EN-33A board

1. Adjust the RV14, RV15 and LV2/EN-33A board so that the burst signals are overlapped with the 75% scale as shown below.



- If not, readjust 4-5-32. V.U Gain Adjustment.



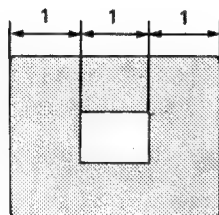
4-5-35. IE-6P Board Adjustment

To be extended : IE-6P board
 Preparations : S3 **DTL** /IE-6P board → ON
 S8 **REG/ENC** /PR-75 board → ENC

(1) Clipping Point Adjustment

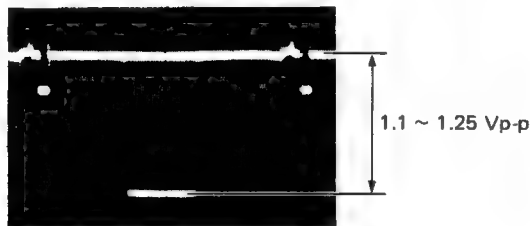
Object : White window chart
 Measuring equipment: Oscilloscope
 Trigger : TP4 (H. TRIG)/SG-63A board

1. Shoot the white window chart as shown below.



Monitor

2. Adjust the \odot RV1/IE-6P board so that the waveform signal level at TP2/IE-6P board is clipped at 1.1 through 1.25V when the lens iris is set at OPEN.



(2) 1H- and 2H-DELAY Signal Phase Adjustment

Object : White window chart
 Measuring equipment: Oscilloscope
 Trigger : TP4 (H. TRIG)/SG-63A board

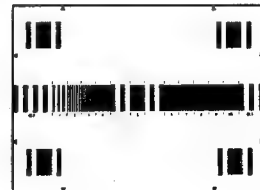
1. Adjust the \odot CV2 and \odot CV3/IE-6P board so that the H. DTL signal does not appear at TP3/IE-6P board.



(3) IE Frequency Response Adjustment

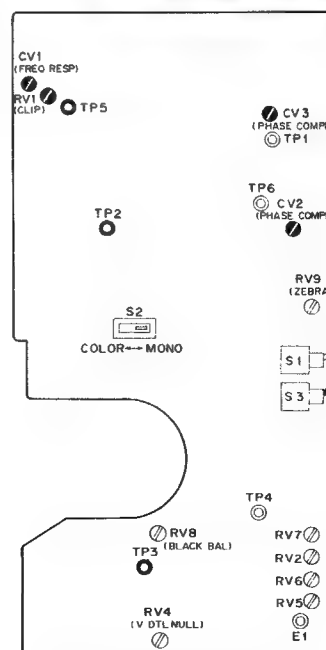
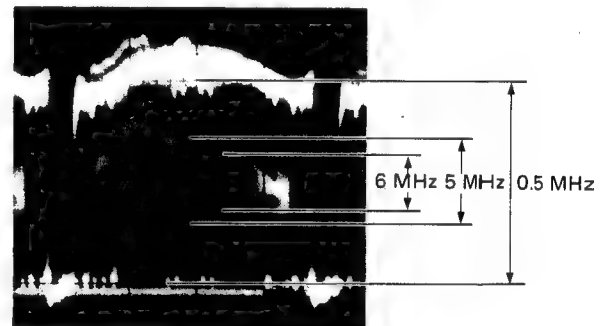
Object : Multiburst chart
 Measuring equipment: Oscilloscope
 Trigger : TP4 (H. TRIG)/SG-63A board

1. Adjust the zoom control so that the Multiburst chart frame touches the underscanned picture frame on the monitor.

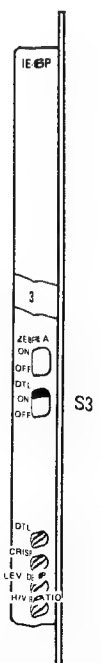


Monitor

2. Adjust the iris control so that the video level corresponding to 0.5 MHz at TP5/IE-6P board is 0.5V. And adjust the focus control so that the waveform amplitude at 5 MHz and 6 MHz is maximized.
3. Adjust the \odot CV1/IE-6P board so that the ratio between the amplitude of 5 MHz and 0.5 MHz at TP2/IE-6P board is same as that at TP5/IE-6P board.



IE-6P board (component side)

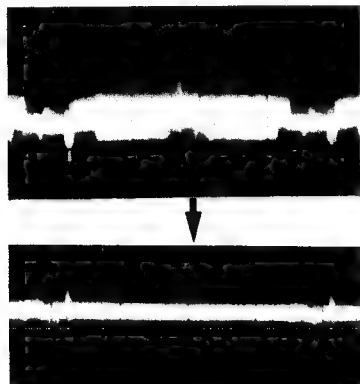


IE-6P board (panel side)

(4) V. DTL NULL Adjustment

Object : Grayscale chart
 Measuring equipment: Waveform monitor, Oscilloscope
 Trigger : TP5 (V. TRIG)/SG-63A board

1. Adjust the iris control so that the video level at the TEST OUT terminal is 686 mV.
2. Adjust the \odot RV4/IE-6P board so that the waveform amplitude at TP3/IE-6P board is minimized.

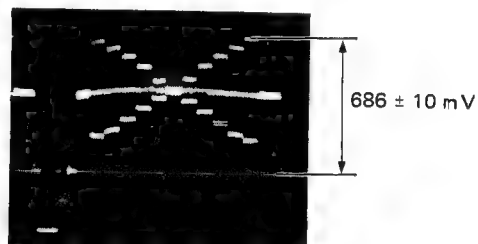


APPLICABLE SERIAL No.
 BVP-3AP(EK): UP TO 22710

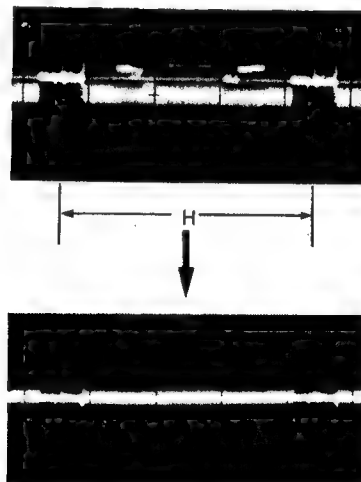
(5) Black Balance Adjustment

Object : Grayscale chart
 Equipment : Oscilloscope, Waveform monitor
 Preparations : \odot RV7 $\boxed{\text{DTL}}$ \rightarrow Fully \odot
 \odot RV2 $\boxed{\text{CRISP}}$ \rightarrow Fully \odot } /IE-6P board
 \odot RV6 $\boxed{\text{LEV. DEP}}$ \rightarrow Fully \odot
 Trigger : TP4 (H. TRIG)/SG-63A board

1. Adjust the zoom control so that the grayscale chart frame touches the underscanned picture frame on the monitor, and adjust the iris control so that the video level at the TEST OUT terminal is $686 \text{ mV} \pm 10 \text{ mV}$.



2. Adjust the \odot RV8/IE-6P board so that the waveform amplitude at TP4/IE-6P board is minimized.

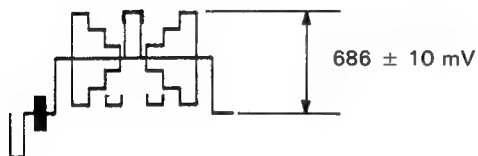


APPLICABLE SERIAL No.
BVP-3AP(EK): 22801 AND HIGHER

(5) Black Balance Adjustment

Object : Grayscale chart
Measuring equipment: Oscilloscope, Waveform monitor
Preparations : \odot RV7 $\xrightarrow{\text{DTL}}$ Fully clockwise \odot } /IE-6P board
 \odot RV2 $\xrightarrow{\text{CRISP}}$ Fully counter clockwise \odot } board
Trigger : TP4 (H. TRIG)/SG-63A board

1. Adjust the zoom control so that the grayscale chart frame touches the underscanned picture frame on the monitor, and adjust the iris control so that the video level at the TEST OUT terminal is $686 \text{ mV} \pm 10 \text{ mV}$.



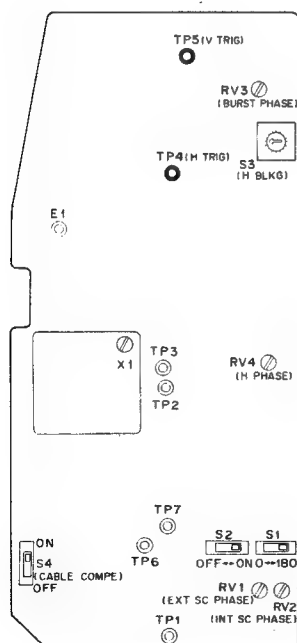
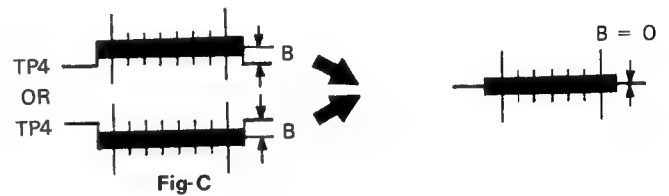
2. Turn \odot RV6/IE-6P board to fully counter clockwise \odot , then adjust the \odot RV6 to clockwise direction so that waveform at TP4/IE-6P board is like a following Fig-A.



3. Adjust \odot RV8/IE-6P board so that the level A of Fig-B waveform at TP4/IE-6P board is level zero.



4. Turn \odot RV6/IE-6P board to fully counter, clockwise \odot .
5. Adjust \odot RV11/IE-6P board so that the level B of Fig-C at TP4/IE-6P board is level zero.






SG-63A board (component side)

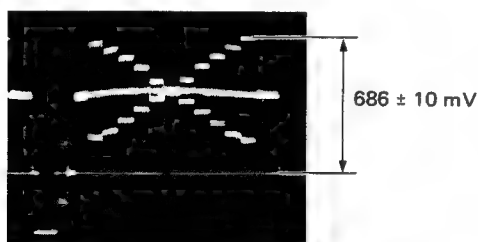
(6) Crispening Adjustment

Object : Grayscale chart

Measuring equipment: Waveform monitor

Preparations :  RV6 LEV. DEP } /IE-6P
→ Fully counterclockwise ⤿ board
 RV5 H/V RATIO }
→ Fully counterclockwise ⤿

1. Adjust the zoom control so that the grayscale chart frame touches the underscanned picture frame on the monitor, and adjust the iris control so that the video level at the TEST OUT terminal is 686 ± 10 mV.
2. Adjust the  RV2 **CRISP**/IE-6P board for such a position that noise of the output waveform on waveform monitor starts to be reduced.




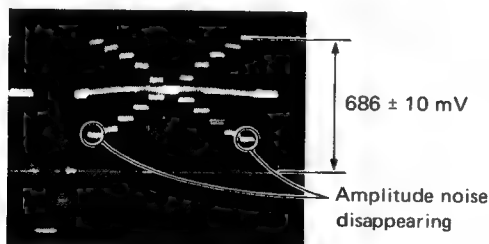
Note: After this adjustment is completed, be sure to carry out (7) Level Dependent Adjustment.

(7) Level Dependent Adjustment

Object : Grayscale chart

Measuring equipment: Waveform monitor

1. Adjust the zoom control so that the grayscale chart frame touches the underscanned picture frame on the monitor, and adjust the iris control so that the video level at the TEST OUT terminal is 686 ± 10 mV.
2. Adjust the  RV6 LEV. DEP /IE-6P board so that the DTL signal is not added to the lowermost step of TEST OUT waveform signal.



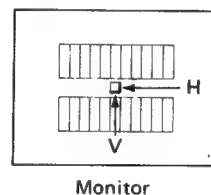
(8) H/V RATIO Adjustment

Object : Grayscale chart

Preparation : RV7 DTL /IE-6P board

→ Fully clockwise

1. Adjust the  RV5 **H/V RATIO** /IE-6P board so that the monitor H and V DTL amounts are the same.



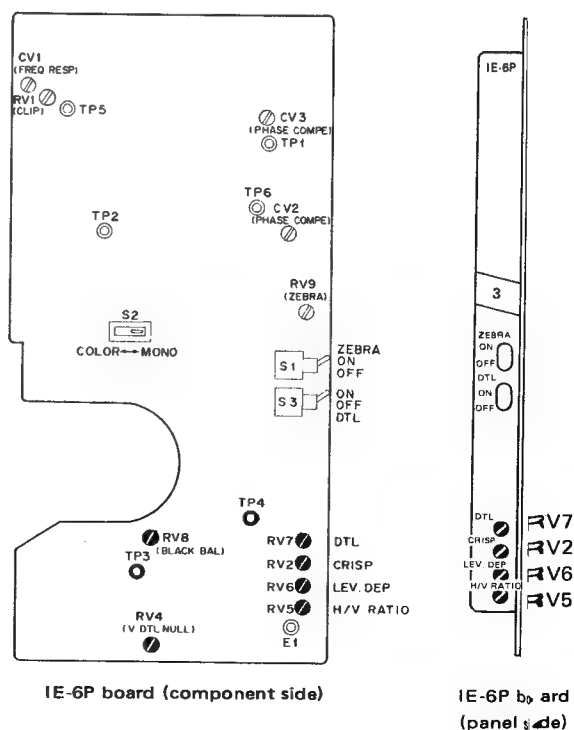
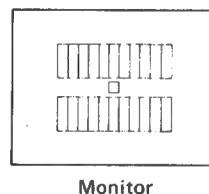
Note: After this adjustment is completed, be sure to carry out (9) DTL Gain Adjustment.

(9) DTL Gain Adjustment

Object : Grayscale chart

To be adjusted : RV7 DTL /IE-6P board

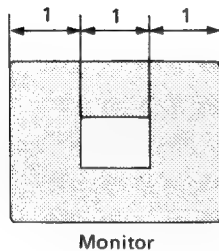
1. Set the **RV7** **DTL** according to the users' requirements while observing the monitor.



4-5-36. VF Zebra Adjustment

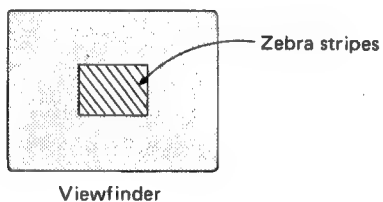
Object : White window chart
 Measuring equipment: Waveform monitor
 Preparations : S8 [REG/ENC]/PR-75 board → ENC
 S1 [ZEBRA]/IE-6P board → ON

1. Shoot the white window chart as shown below.

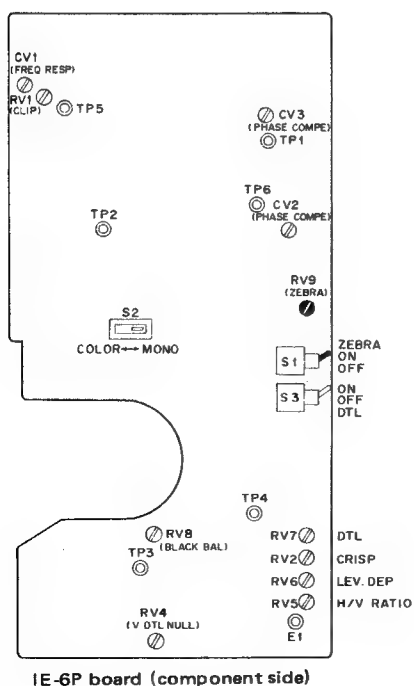


Monitor

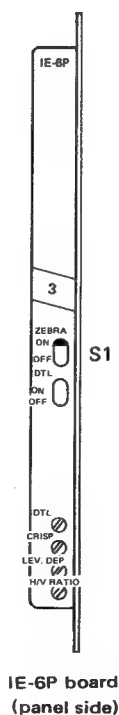
2. Adjust the iris control so that the video level at the TEST OUT terminal is 500 mV.
3. Adjust the RV9/IE-6P board so that the viewfinder has zebra stripes.



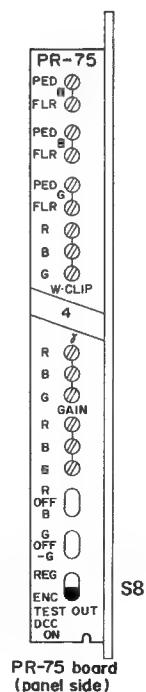
Viewfinder



IE-6P board (component side)



IE-6P board (panel side)

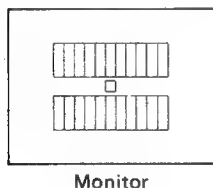


PR-75 board (panel side)

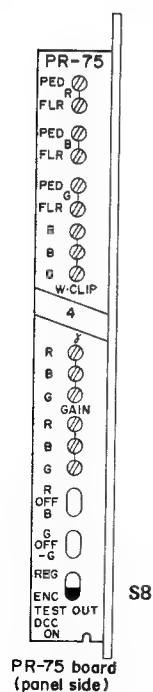
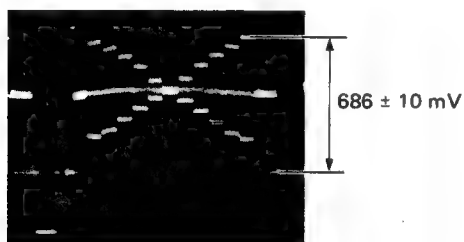
4-5-37. Auto Iris Adjustment

Object : Grayscale chart
 Measuring equipment: Waveform monitor
 Lens : AUTO/MANU switch → AUTO
 Preparation : ●RV1/AT-16 board → Mechanical center

1. Adjust the zoom control so that the grayscale chart frame touches the underscanned picture frame on the monitor.



2. Adjust the ●RV2/AT-16 board so that the video level at the TEST OUT terminal is 686 ± 10 mV.

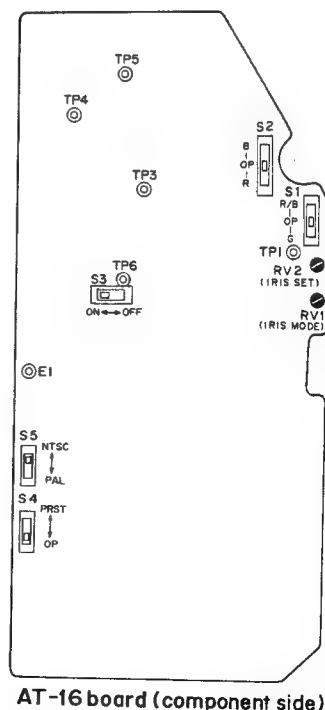


PR-75 board
(panel side)

4-5-38. Auto Iris Mode Adjustment

Notes: The Auto Iris mode is usually set at the mechanical center position.

Adjust the ●RV1/AT-16 board so that the average or peak mode is established in accordance with the requirements.

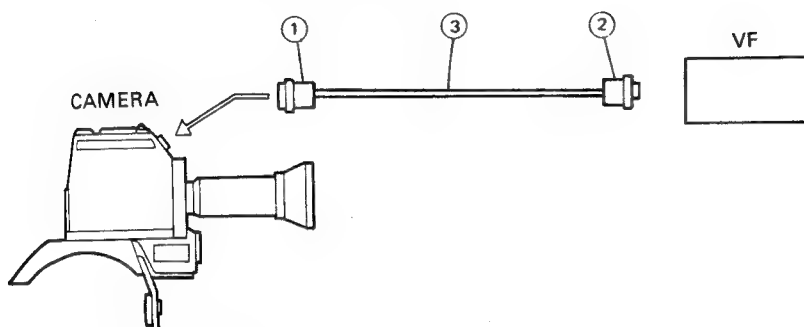


AT-16 board (component side)

HOW TO MAKE THE VF EXTENSION CABLE

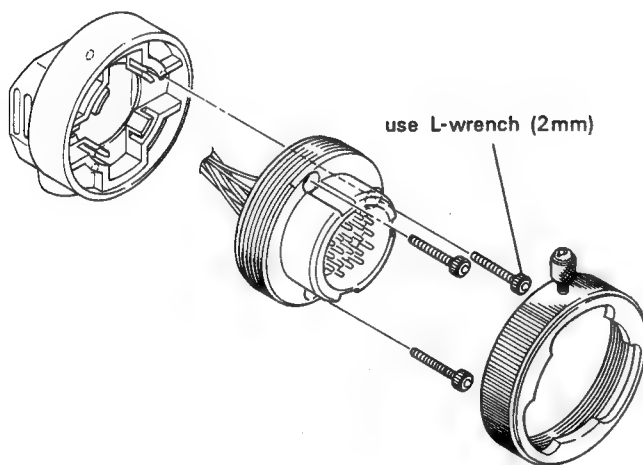
1. Requisite Parts.

- ① 20P-CONNECTOR (male) 1-560-704-21
- ② 20P-CONNECTOR (female) ... 1-561-812-00
- ③ CABLE (WIRE: Single ... 3, Shield ... 1)

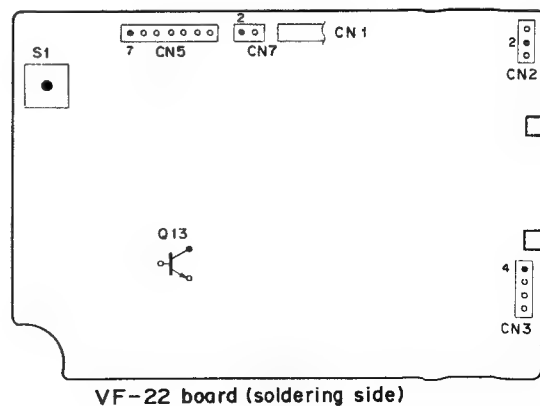
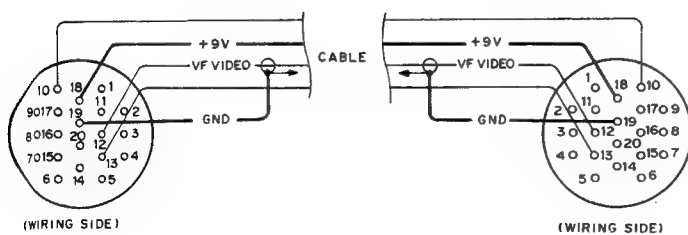


2. Remove 20P-Connector

ex: male



3. WIRING



4-6. VIEWFINDER SYSTEM ADJUSTMENT

- When adjusting the viewfinder, turn it 180° so that it is upside down.
- Be sure that the camera is adjusted completely.
- Set the lens iris to AUTO, unless otherwise specified.

4-6-1. V Hold Adjustment

Measuring equipment: Oscilloscope

Preparation : Pull the IE-6P board out of the Camera.
Set the RV9/VF-22 board to mechanical center unless otherwise marked.

To be measured : 4 pin of CN3

To be adjusted : RV7/VF-22 board

Specification : $T = 25.6 \pm 0.5 \text{ ms}$



Note: After this adjustment is completed, insert the IE-6P board into the Camera.

4-6-2. Flyback Pulse Width Adjustment

Note: Carry out this adjustment only when the T2 (FLYBACK) /VF-22 board is replaced.

Measuring equipment: Oscilloscope (AC mode)

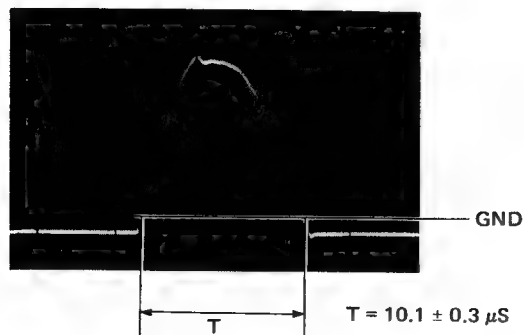
Preparations : **BRIGHT** → Fully counterclockwise ⤴

CONTR → Fully counterclockwise ⤴

To be measured : Collector of Q13/VF-22 board

Specification : $T = 10.1 \pm 0.3 \mu\text{s}$

1. When the Flyback pulse width is out of the specification, replace the C19/VF-22 board from the list below so that the pulse width meets the specification.



C19:	1-136-287-11	0.0047μF
	1-136-288-11	0.0051μF
	1-136-289-11	0.0056μF
	1-136-290-11	0.0062μF
	1-136-291-11	0.0068μF
	1-136-292-11	0.0075μF
	1-136-293-11	0.0082μF

4-6-3. Horizontal Hold Adjustment

Measuring equipment : Oscilloscope

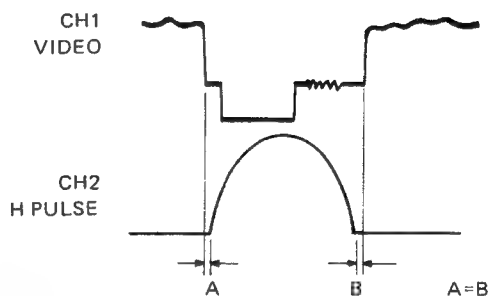
To be measured : CH1 2 pin of CN7/VF-22 board

CH2 collector of Q13/VF-22 board

Trigger : CH2

To be adjusted : RV5/VF-22 board

Specification : $A = B$



4-6-4. DC Balance Adjustment

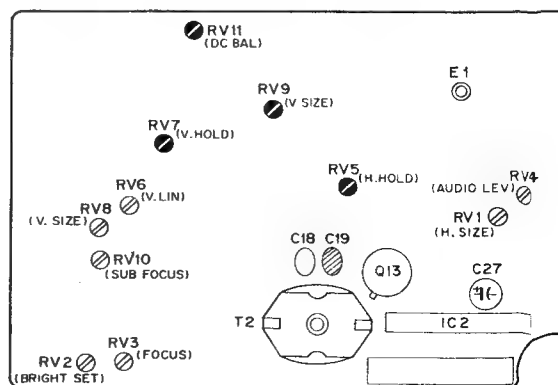
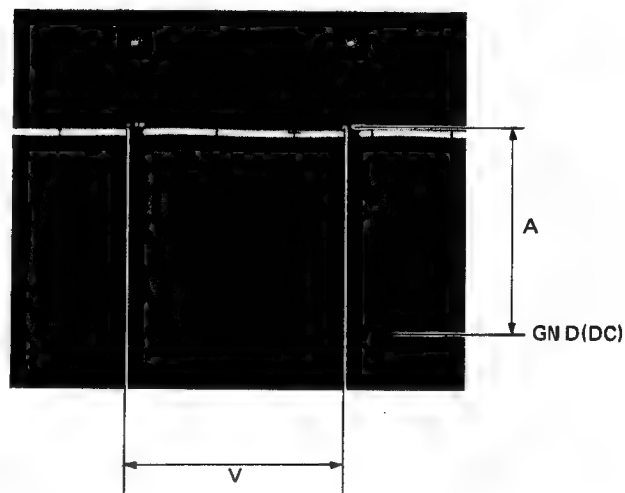
Lens : Close

Measuring equipment: Oscilloscope

To be measured : 2 pin of CN2

To be adjusted : RV11/VF-22 board

Specification : $A = 47 \pm 2V$

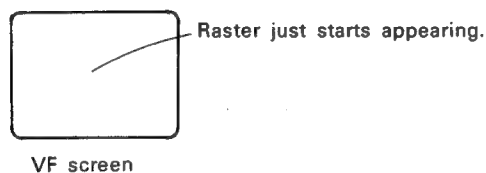


VF-22 board (component side)

4-6-5. Brightness Adjustment

Lens : Close
 Preparations : **BRIGHT** → mechanical center
 CONTR → Fully counterclockwise ⤿
 To be adjusted : ● RV2/VF-22 board

1. Adjust the ● RV2/VF-22 board at the point where the raster just starts appearing.

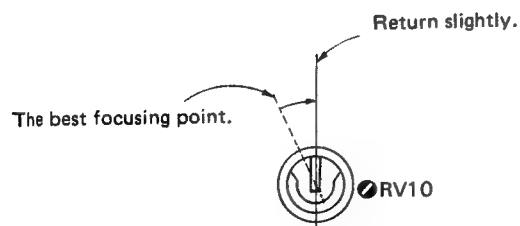


4-6-6. Focus Adjustment

Note: 4-6-8 Picture Frame Adjustment and this adjustment affect each other, so carry out these adjustment alternately until both specifications are satisfied.

Object : Resolution chart
 Lens : AUTO/MANU switch → "MANU"
 Preparations : S1 **WHT CLIP** /PR-75 board → OFF
 BRIGHT → Mechanical center
 CONTR → Fully clockwise ⤿
 S1 (PEAKING) → OFF
 ● RV10 → Fully clockwise/⤿ } /VF-22 board

1. Adjust the lens iris so that the video level at TEST OUT terminal is 100%.
2. Adjust the ● RV3/VF-22 board so that the picture on the CRT is the best focused.
3. S1 (PEAKING) → ON
4. Turn the ● RV10/VF-22 board counterclockwise ⤿ until the high peaked edges of the picture are the best focused, then return the ● RV10 slightly.



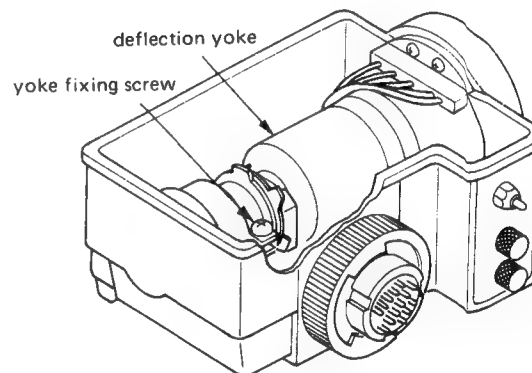
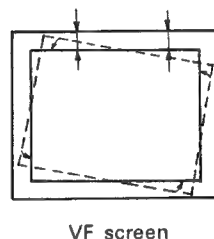
5. Set the S1 (PEAKING) at "OFF" and carry out Step 2. again.

Note: After this adjustment is completed, set the S1 **WHT CLIP** /PR-75 board at "ON".

4-6-7. Deflection Yoke Tilt Adjustment

Adjustment :

1. Loosen the deflection yoke fixing screw and turn the yoke until any inclination on the viewfinder picture is eliminated.
2. After this adjustment is completed, tighten the fixing screw.

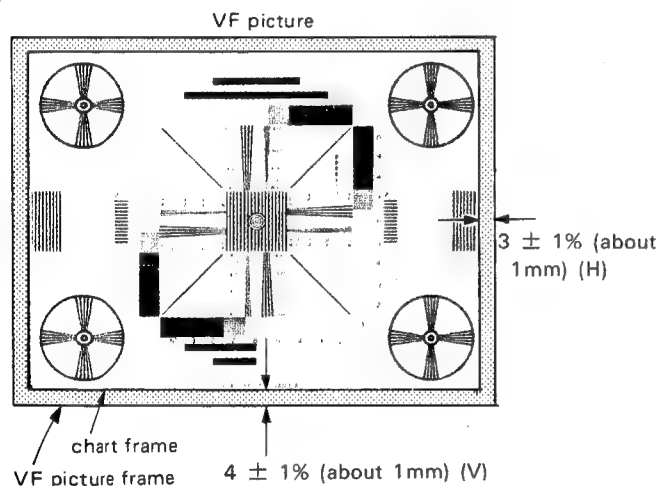


4-6-8. Picture Frame Adjustment

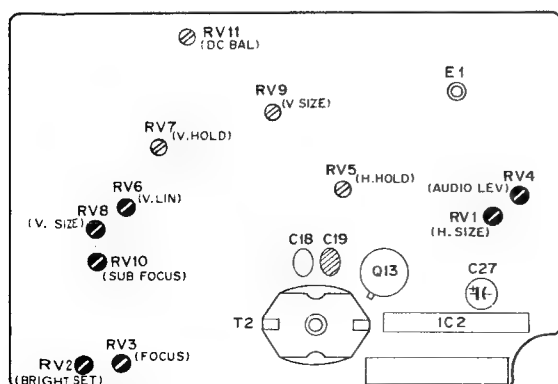
Note: 4-6-6. Focus Adjustment and this adjustment affect each other, so carry out these adjustment alternately until both specifications are satisfied.

Object : Resolution chart
 Preparations : Remove the eyecup from the viewfinder.
 S1 (PEAKING)/VF-22 board → OFF
 BRIGHT → Mechanical center
 CONTR → Mechanical center

1. Adjust the zoom control so that the Resolution chart frame touches the underscanned picture frame on the monitor.
2. Adjust the centering magnet so that the resolution chart is located in the center of the VF picture.
3. Adjust the RV4/VF-22 board so that the H size is underscanned $3 \pm 1\%$ (about 1mm) from the VF picture frame.
4. Adjust the RV8/VF-22 board so that the V size is underscanned $4 \pm 1\%$ (about 1mm) from the VF picture frame.



5. Adjust the RV6/VF-22 board so that the each circle on the corners of the Resolution chart becomes a true circle.
6. Adjust the centering magnet again so that the resolution chart is located in the center of the VF picture.
7. Adjust the inclination of the deflection yoke to a horizontal picture.
8. Repeat Step 2 through Step 7 until each specification is satisfied.

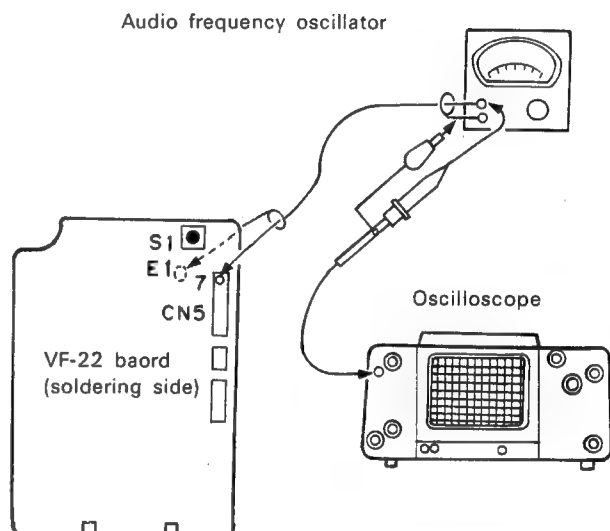


VF-22 board (component side)

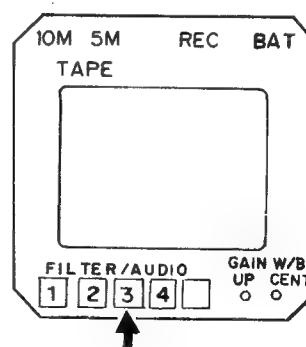
4-6-9. Audio Level Adjustment

Note: This adjustment can non be performed when a VTR (BVV-1APS) is attached. So perform this adjustment with a BVP-3AP alone.

Measuring equipment: Oscilloscope
 Audio frequency oscillator
 Preparations : AUDIO/FILTER switch → "AUDIO"
 ZEBRA/TALLY switch → "OFF (center)"
 To be adjusted : RV4/VF-22 board
 Connection :

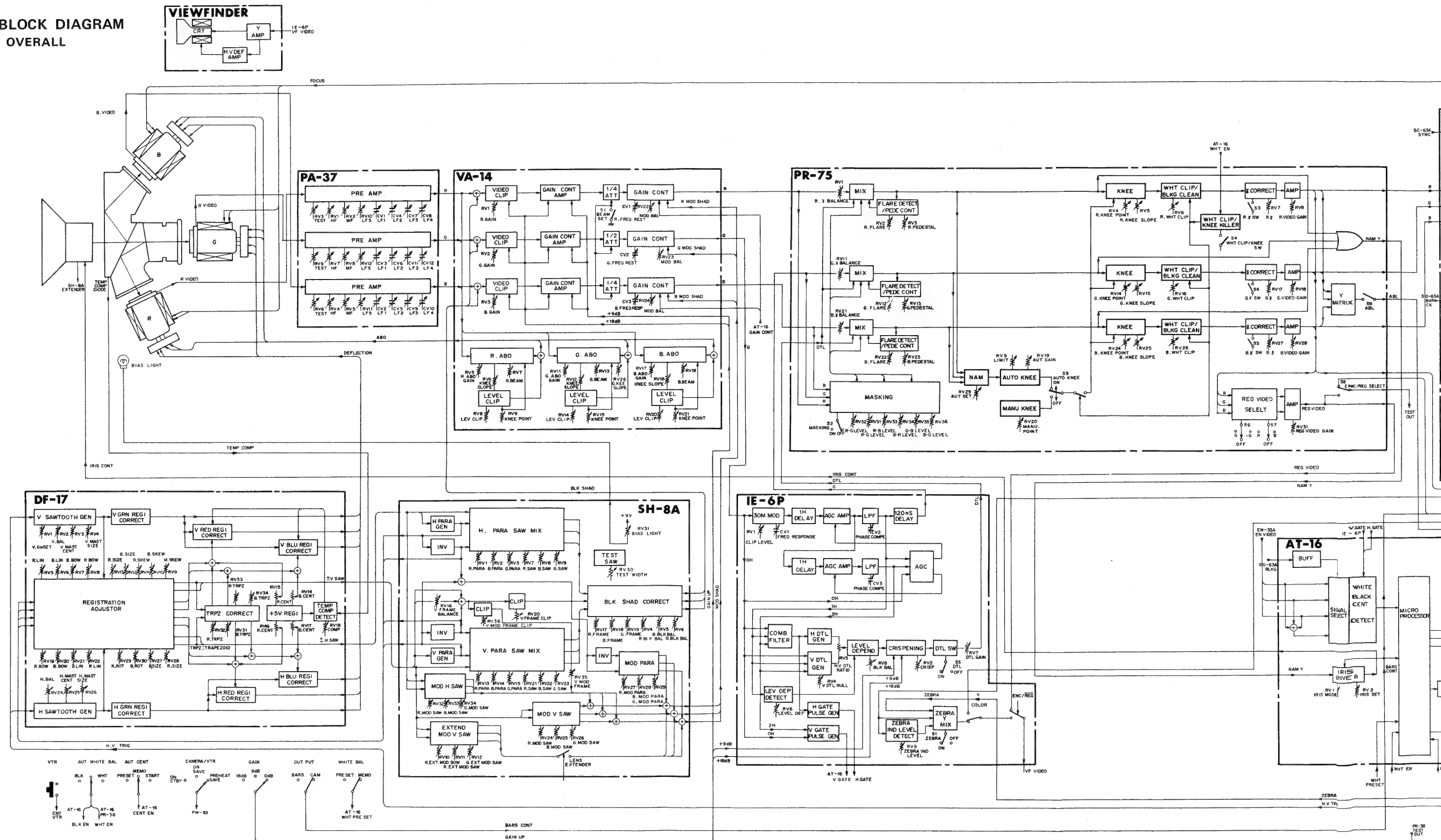


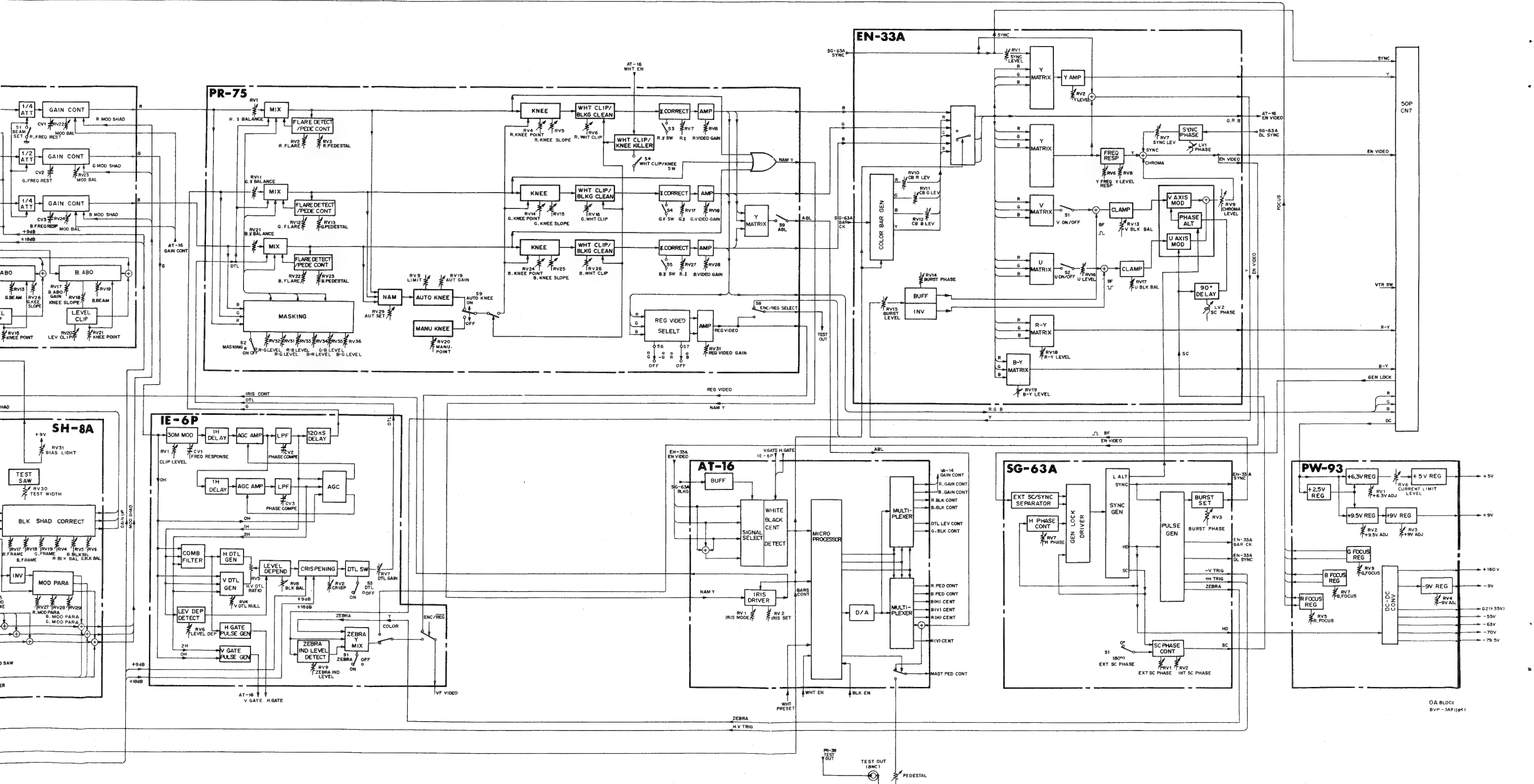
1. Adjust the RV4/VF-22 board so that the 3 (LED) on the indication plate of the viewfinder lights up slightly when the sine-wave, 1 KHz, 0.332 Vp-p is fed to pin 7 of CN5, and 3 (LED) goes off when the sine-wave level is reduced to 0.328 Vp-p.



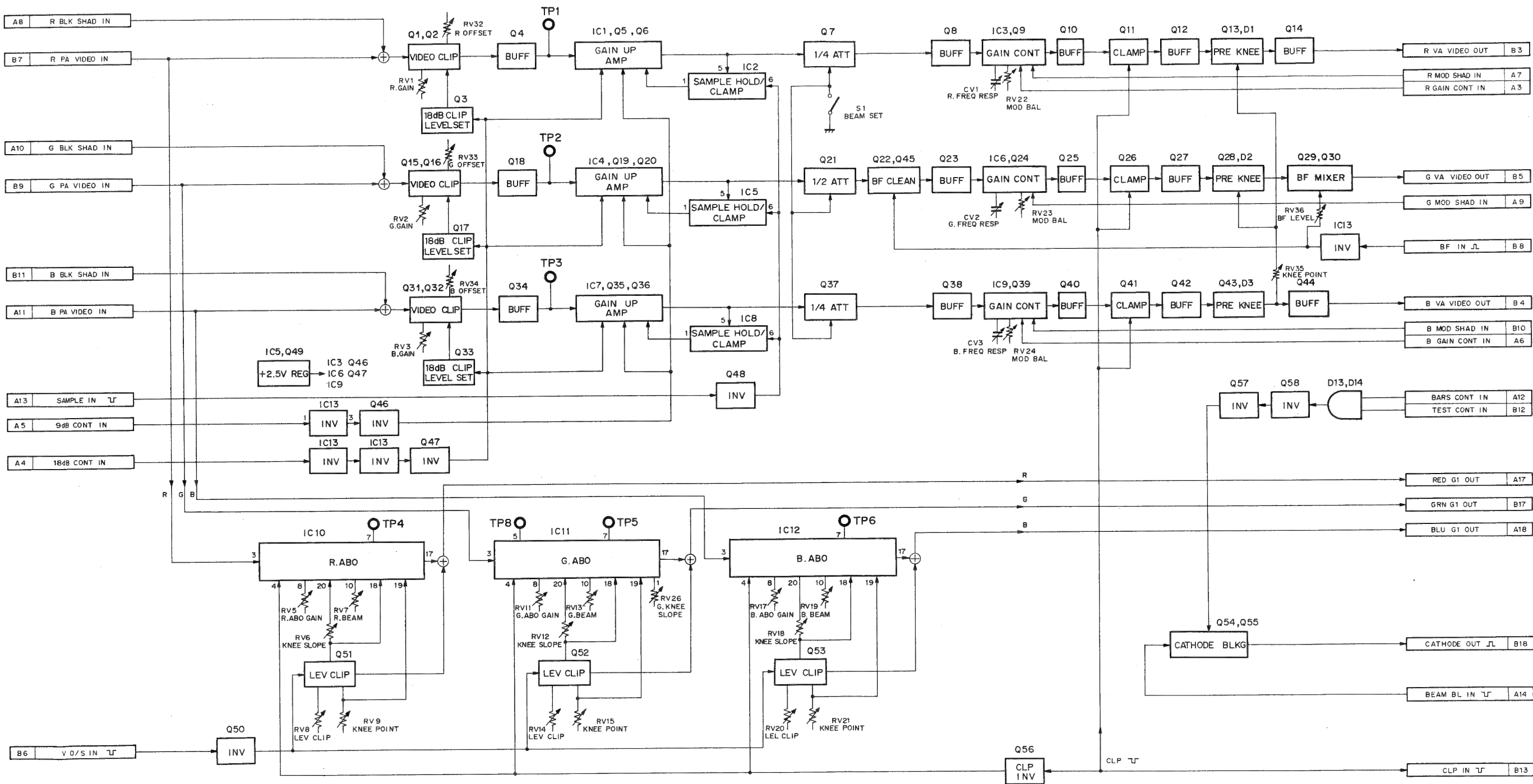
SECTION 5 DIAGRAM

5-1. BLOCK DIAGRAM OVERALL



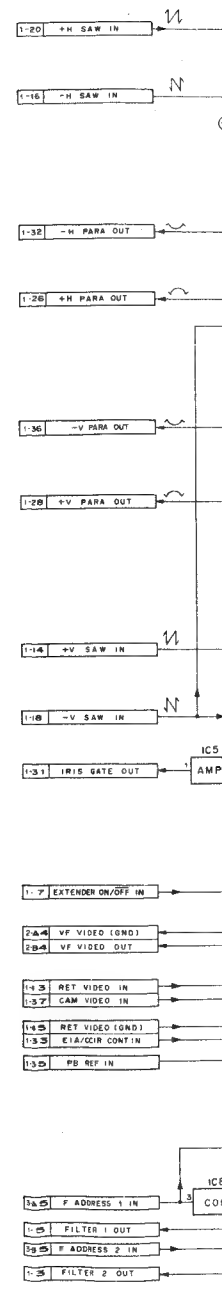


VA-14 BOARD

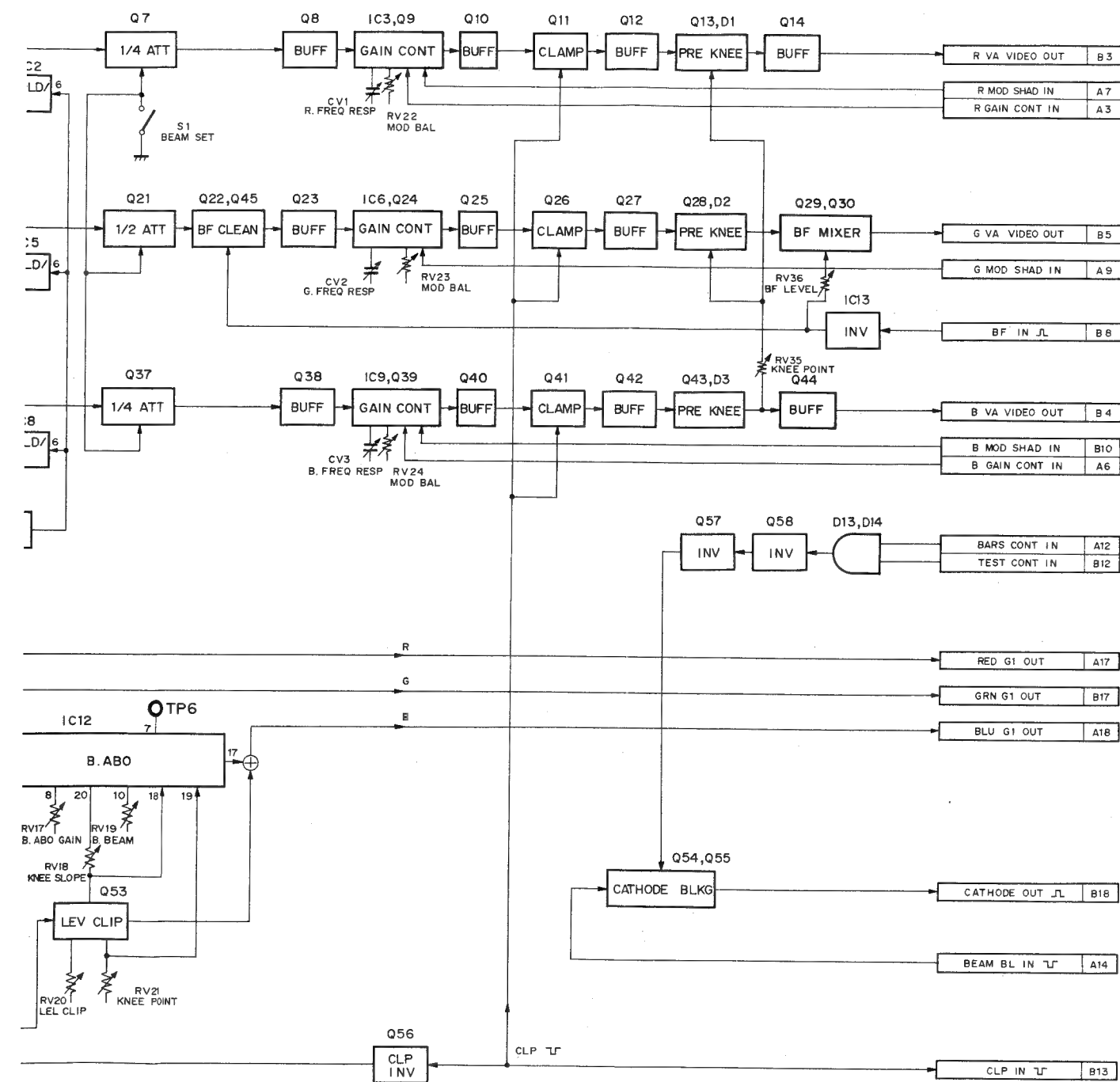


VA - 14 BLOCK
BVP-3A (J,UC)
BVP-3AP (EK)
BVP-3AN (J)

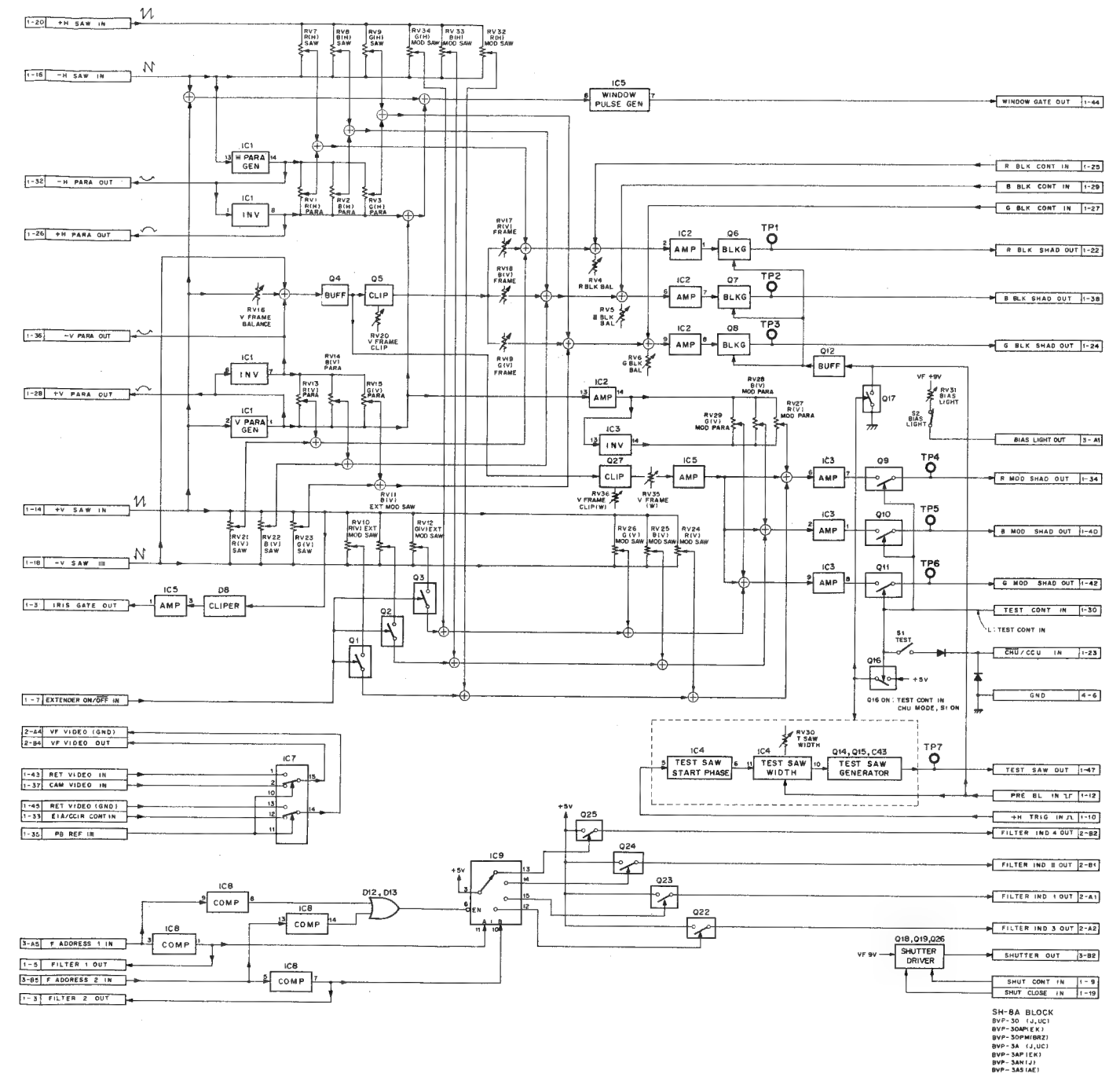
SH-8A BO



SH-8A BOARD

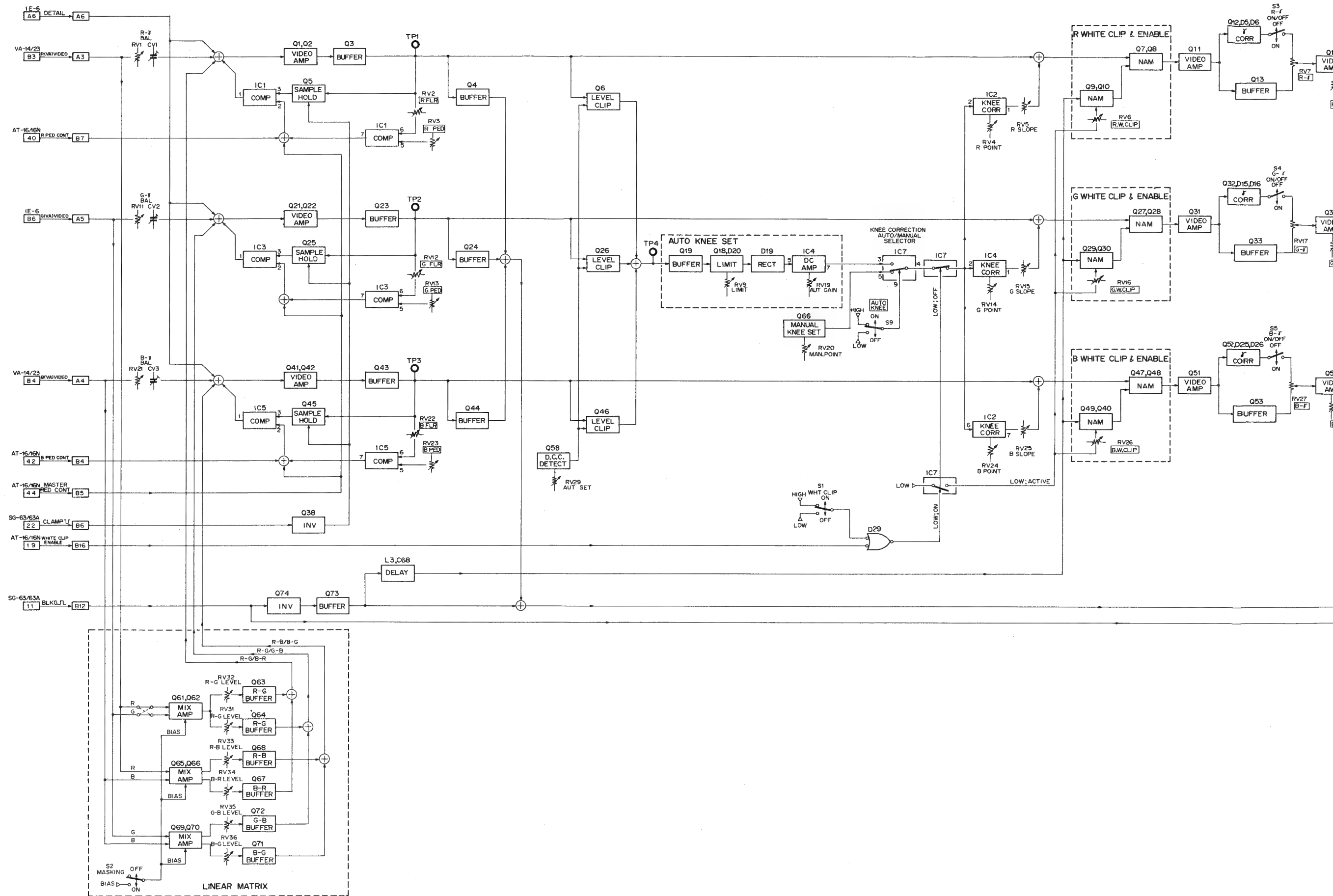


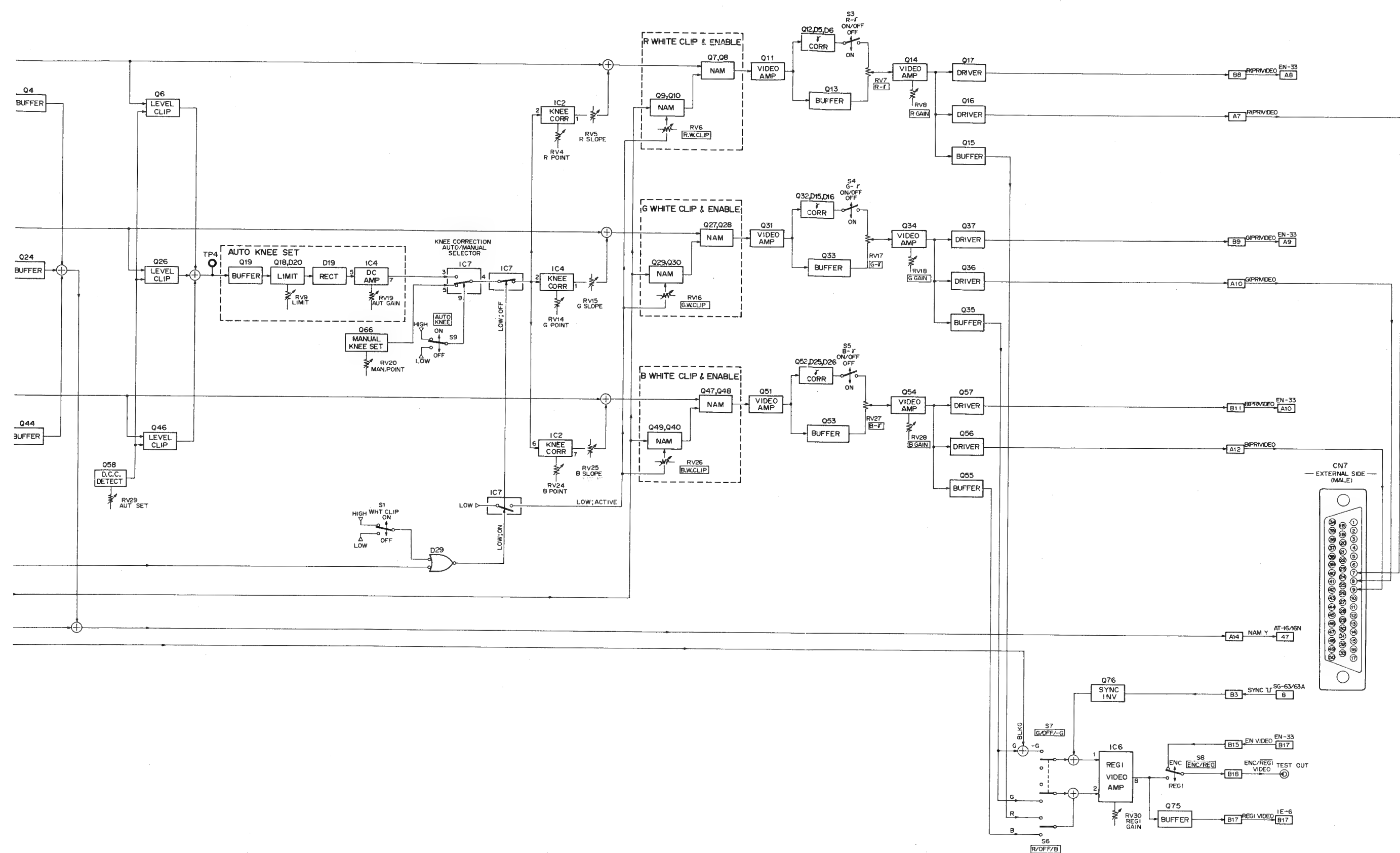
VA - 14 BLOCK
BVP-3A (J,UC)
BVP-3AP (EK)
BVP-3AN(J)



SH-8A BLOC
BVP-30 (J,UC
BVP-30M(IEK)
BVP-30PM(BRZ)
BVP-3A (J,UC)
BVP-3AP(IEK)
BVP-3AN(IJ)
BVP-3AS(AE)

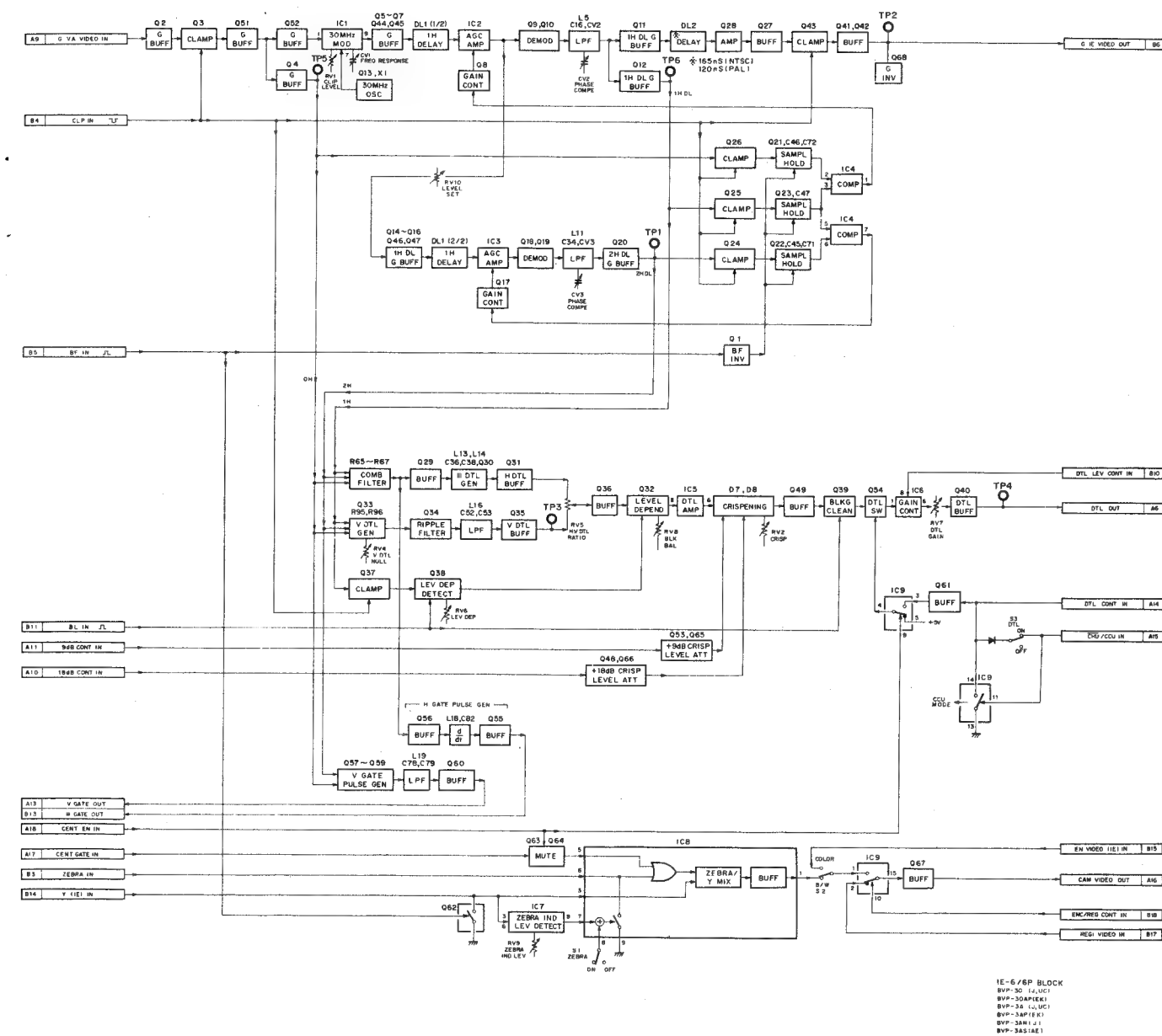
PR-75 BOARD



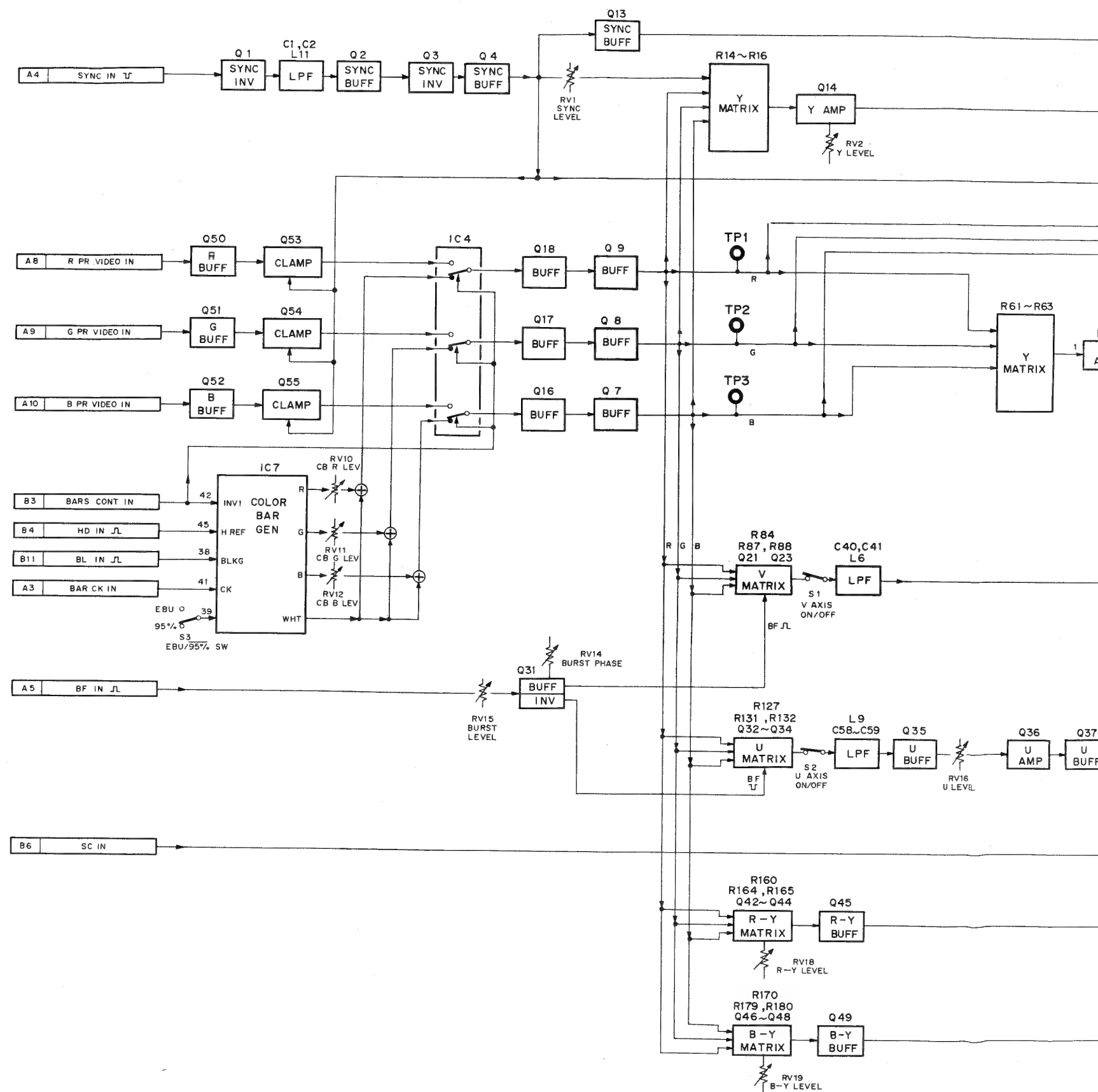


PR-75 BLOCK
BVP-3A (JUC)
BVP-3AP (EK)
BVP-3AN (J)
BVP-3AS (AE)
BVP-30 (JUC)
BVP-30AP (EK)

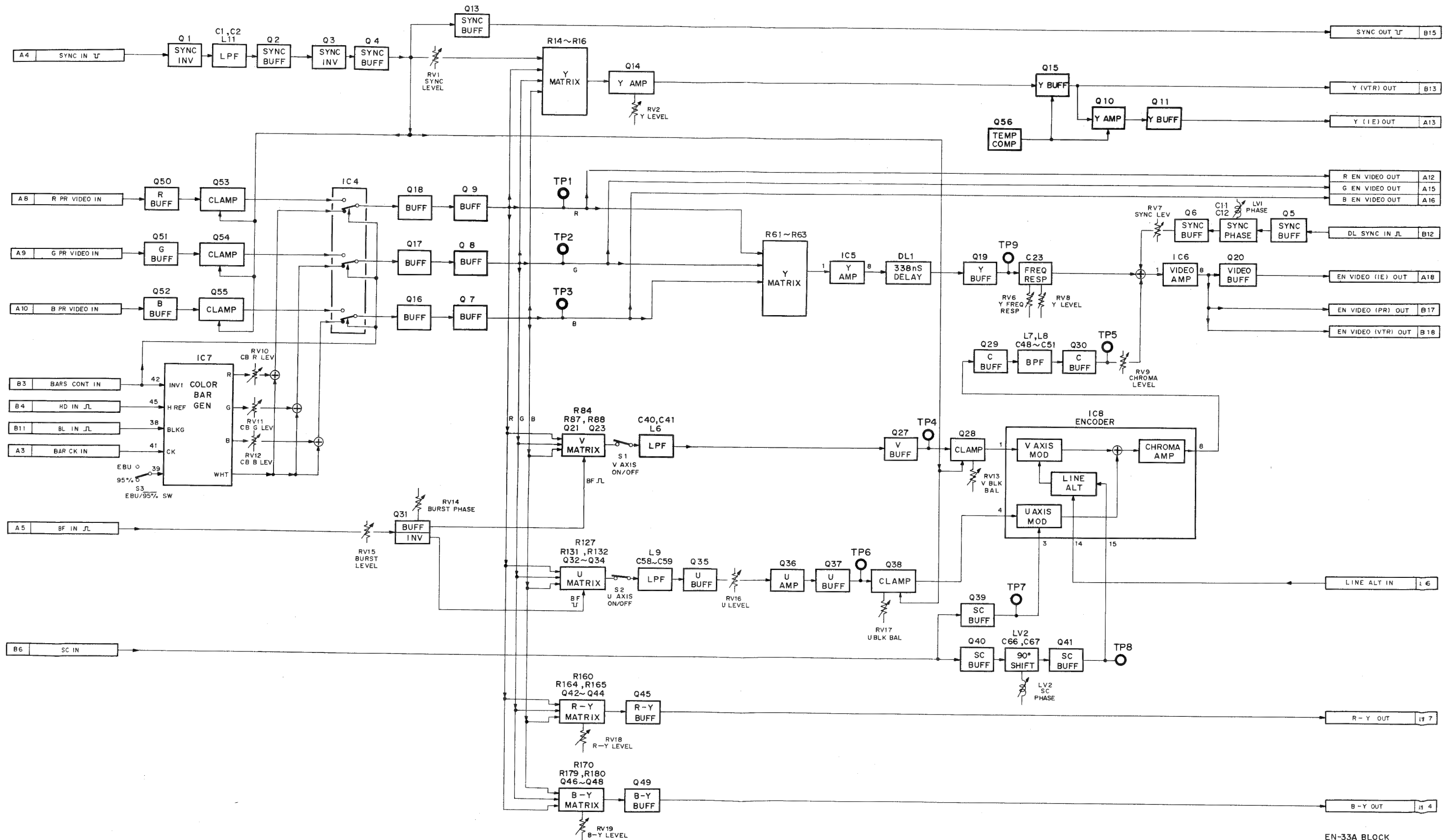
IE-6P BOARD



EN-33A BOARD

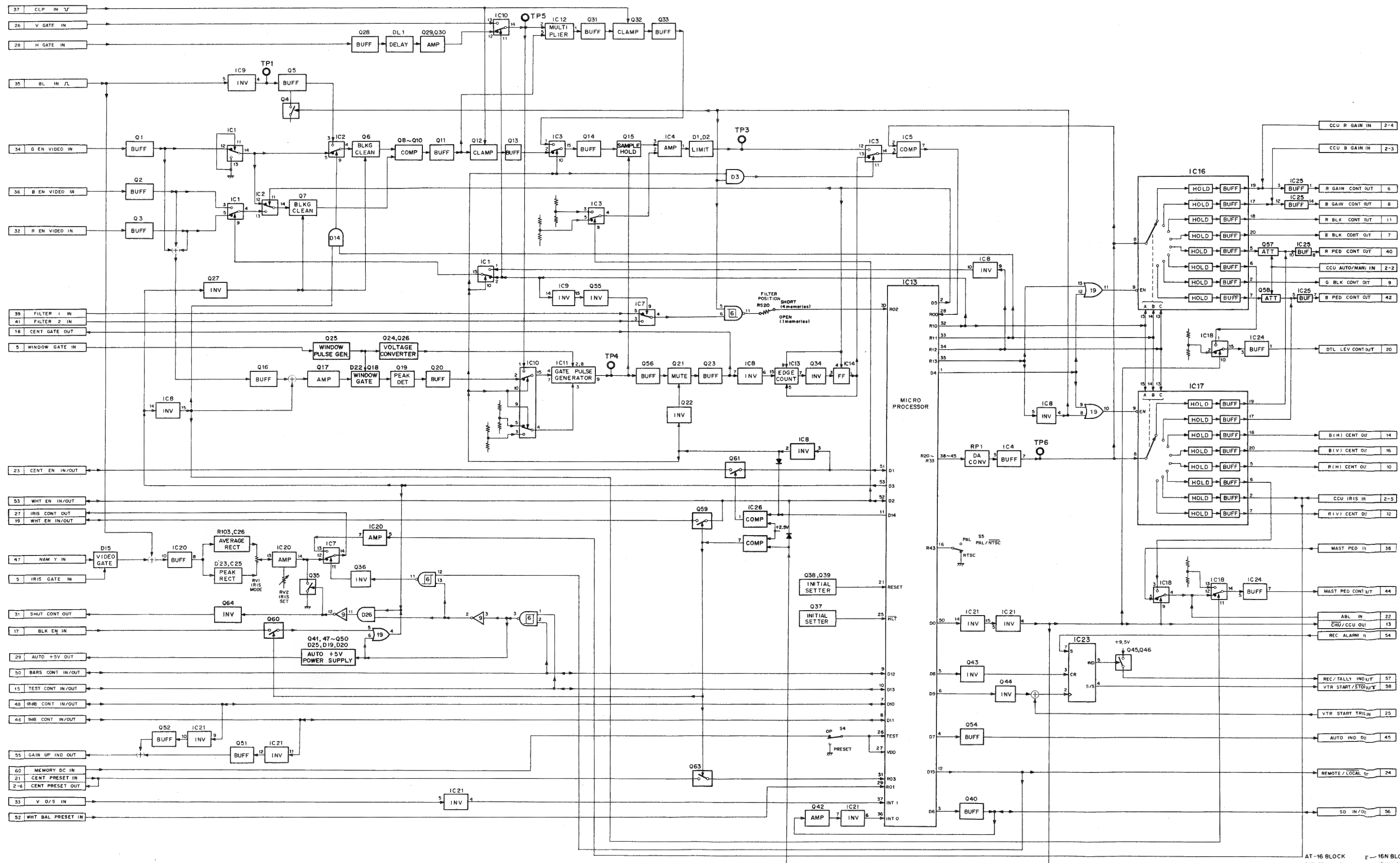


EN-33A BOARD



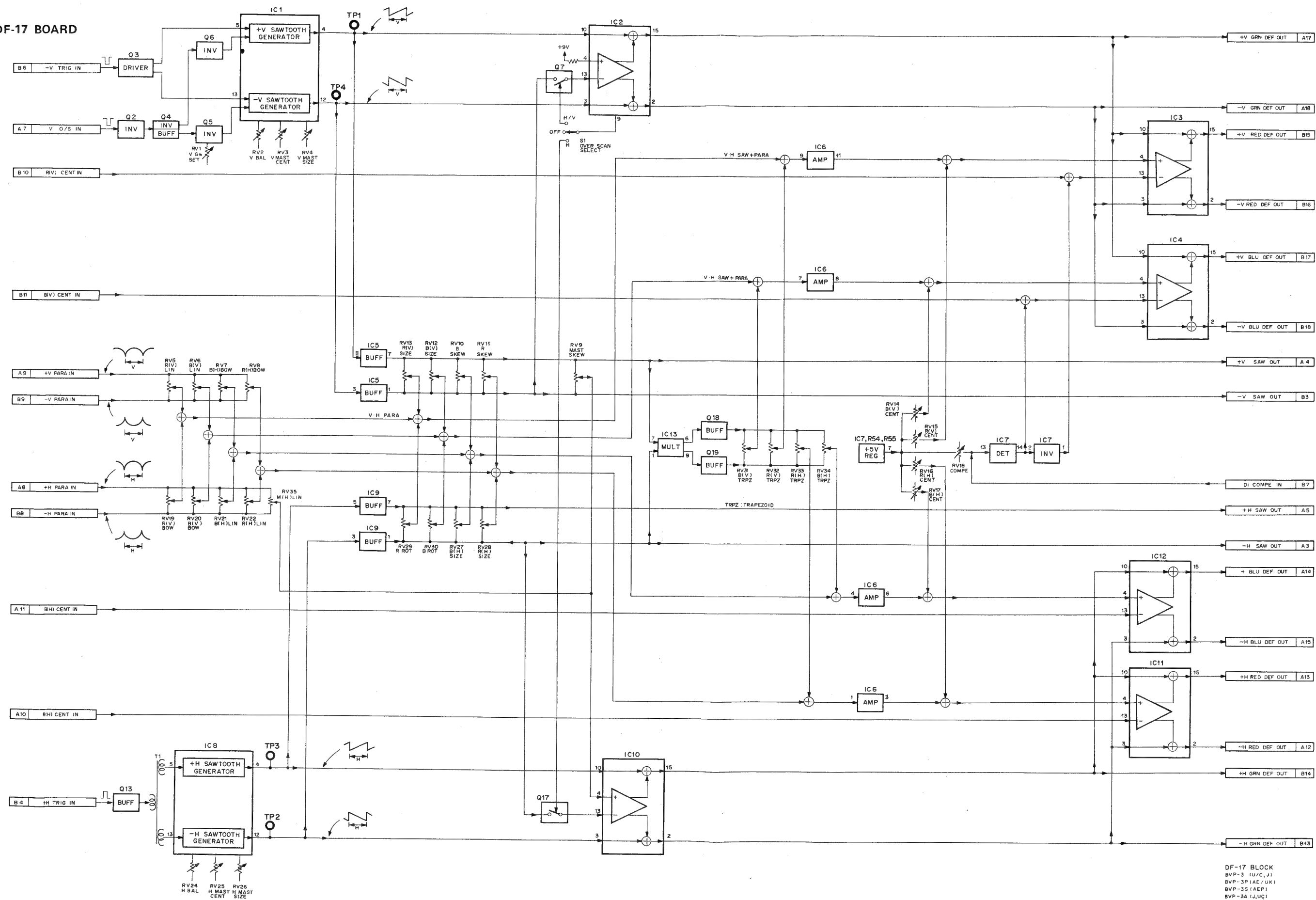
EN-33A BLOCK
BVP-30AP(EK)
BVP-3AP(EK)

AT-16/16N BOARD



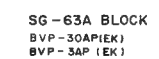
DF-17 B.D DF-17 B.D

DF-17 BOARD



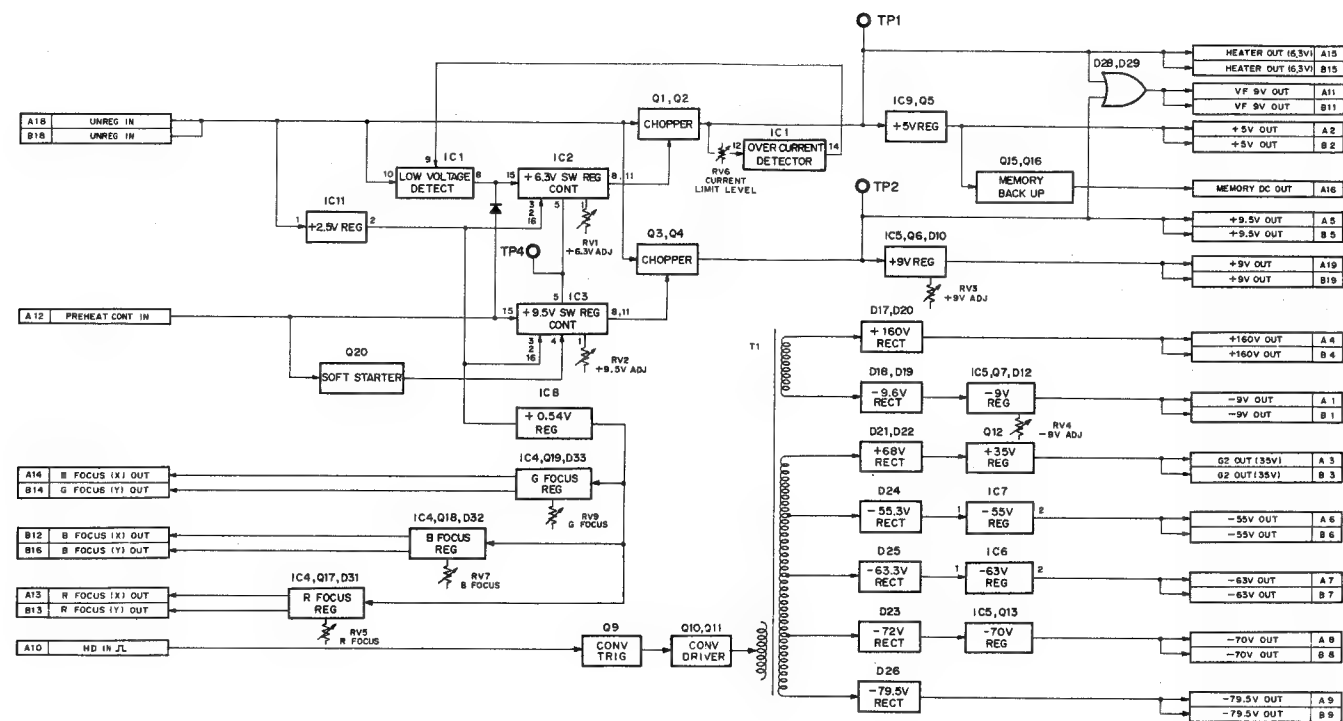
DF-17 BLOCK
 BVP-3 (U/C, J)
 BVP-3P (AE/UK)
 BVP-3S (AEP)
 BVP-3A (J, UC)
 BVP-3AP (EK)
 BVP-3AN (J)

SG-63A BOARD

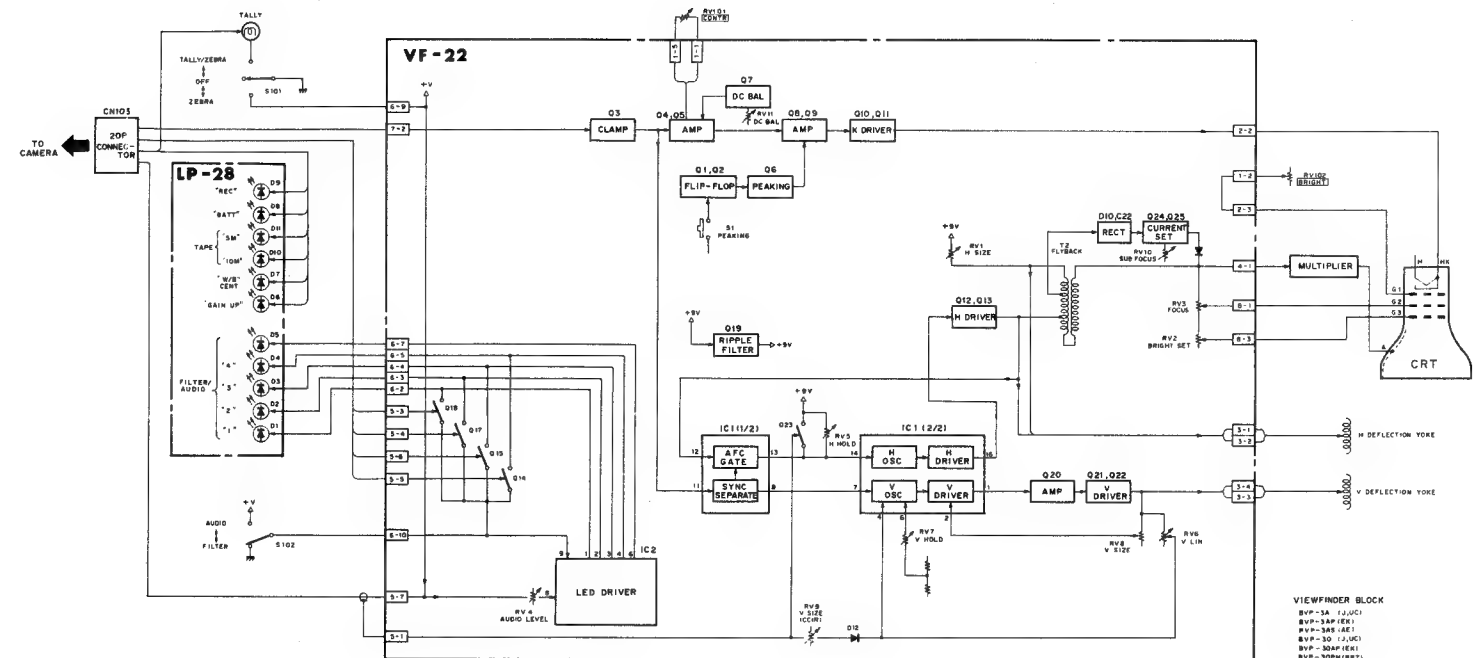


VF B.D

VIEWFINDER

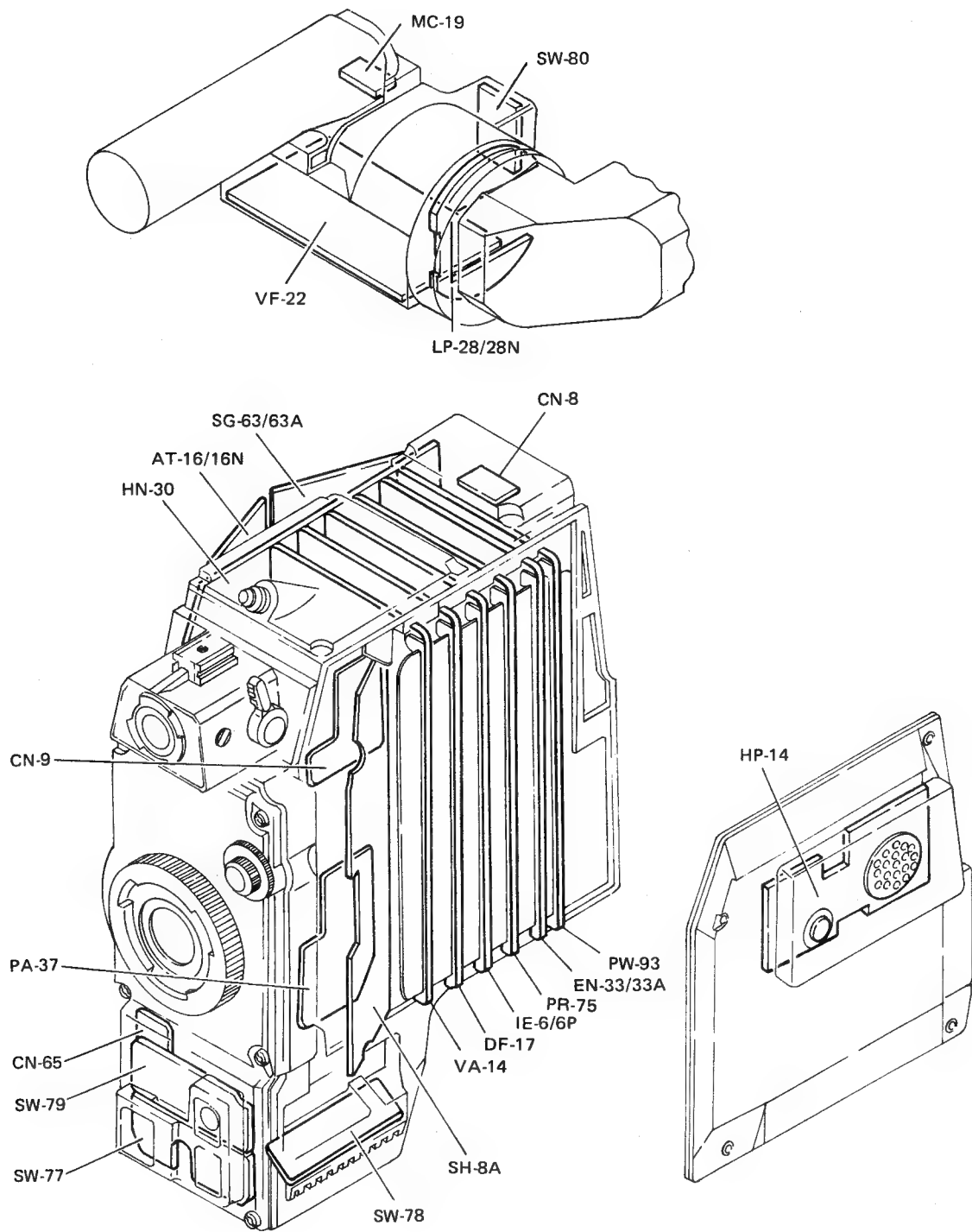


PW-93 BLOCK
BVP-3A(J,UC)
BVP-3AP(EK)
BVP-3AN(J)



```
VIEWFINDER BLOCK
BVP-3A (J,UC)
BVP-3AP(EK)
BVP-3AS(AE)
BVP-3O (J,UC)
BVP-3OAP(EK)
BVP-3OPN(BRZ)
```


5-2. MOUNTING DIAGRAM AND SCHEMATIC DIAGRAM
LOCATION OF MOUNTED CIRCUIT BOARD

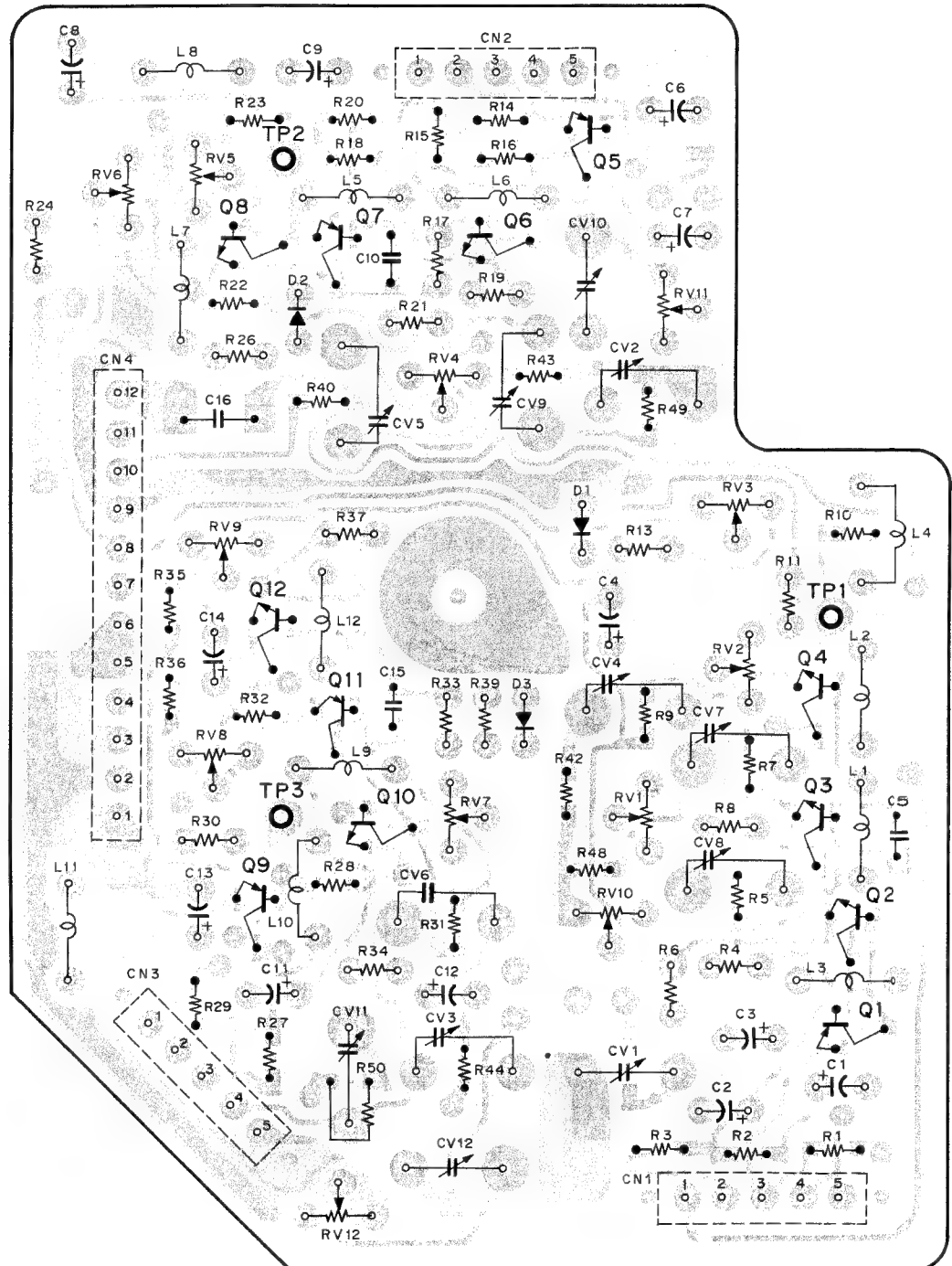


PA-37, PP-10

PARTS NO. 1-612-380-13

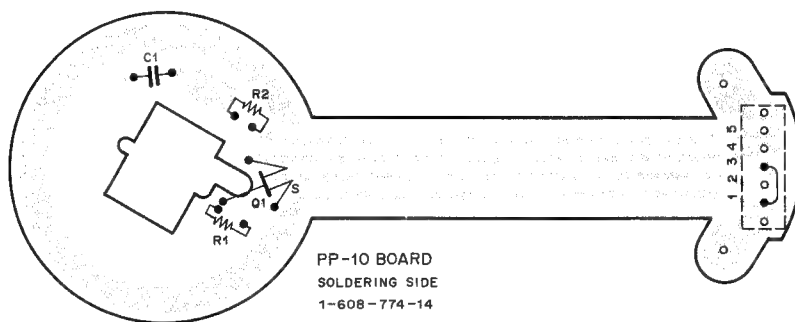
PA-37 BOARD

— SOLDERING SIDE —



PP-10 BOARD

— SOLDERING SIDE —



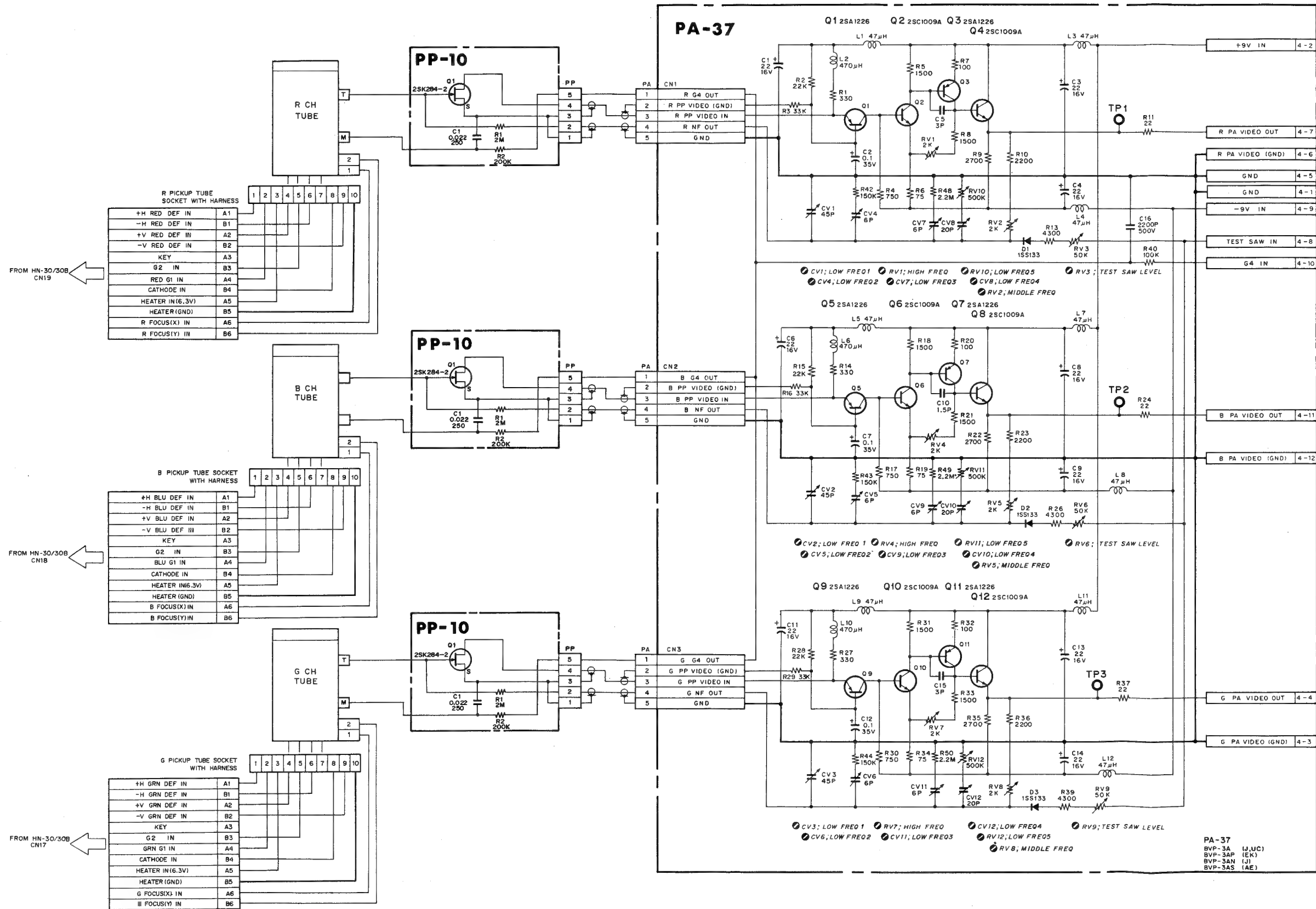
PP-10 BOARD
SOLDERING SIDE
1-608-774-14
BVP-3A(J,UC)
BVP-3AN(J)
BVP-3AP(EK)
BVP-3AS(AE)

PA-37 BOARD SOLDERING SIDE

1-612-380-13
BVP-30 (J,UC)
BVP-30APEK)
BVP-30PMI(BRZ)
BVP-3A (J,UC)
BVP-3AN(J)
BVP-3AP(EK)
BVP-3AS(AE)

PP-10, PA-37 PA-37, PP-10

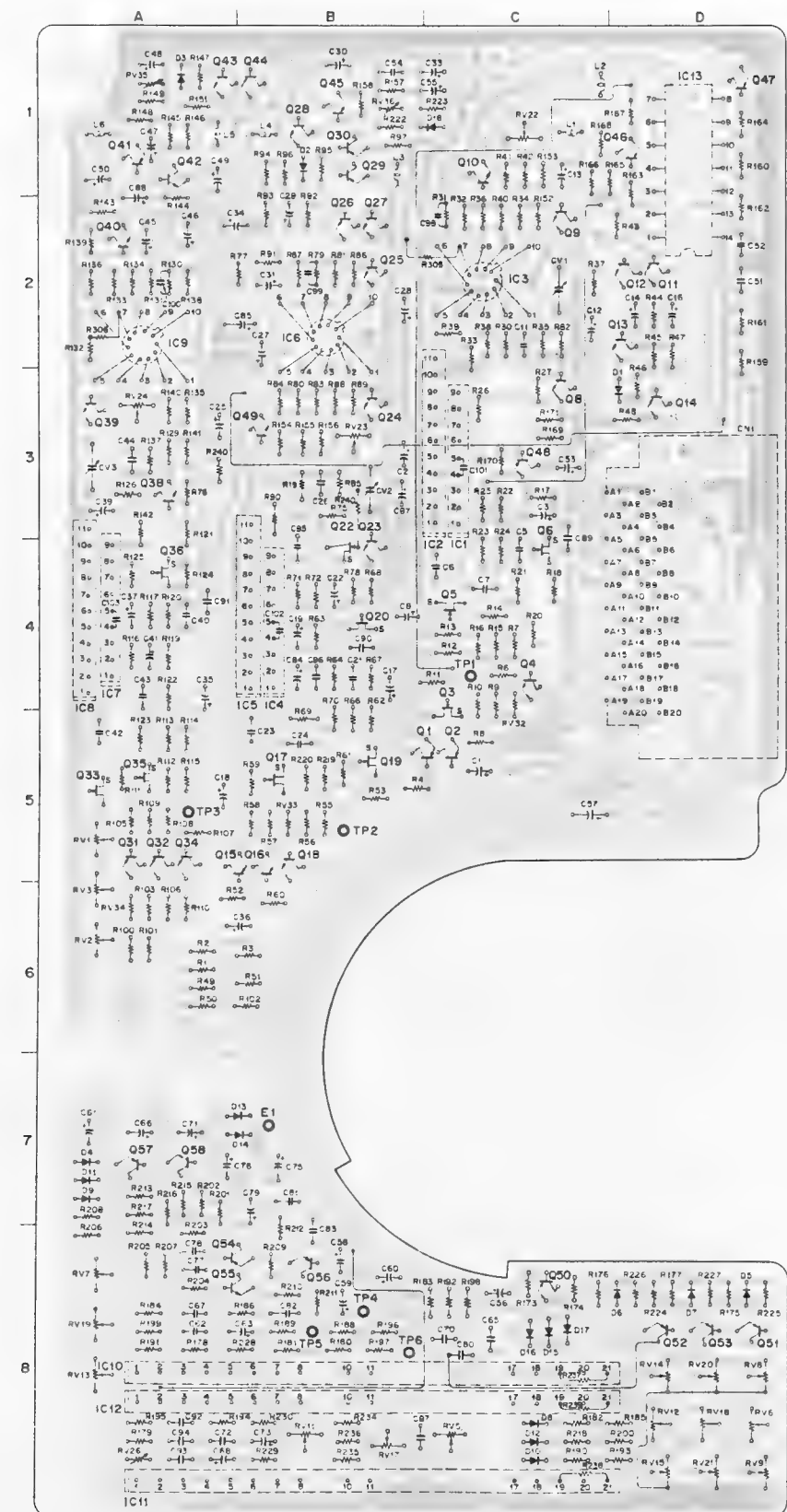
PA-37 BOARD
PP-10 BOARD



VA-14

VA-14 BOARD
-- SOLDERING SIDE --

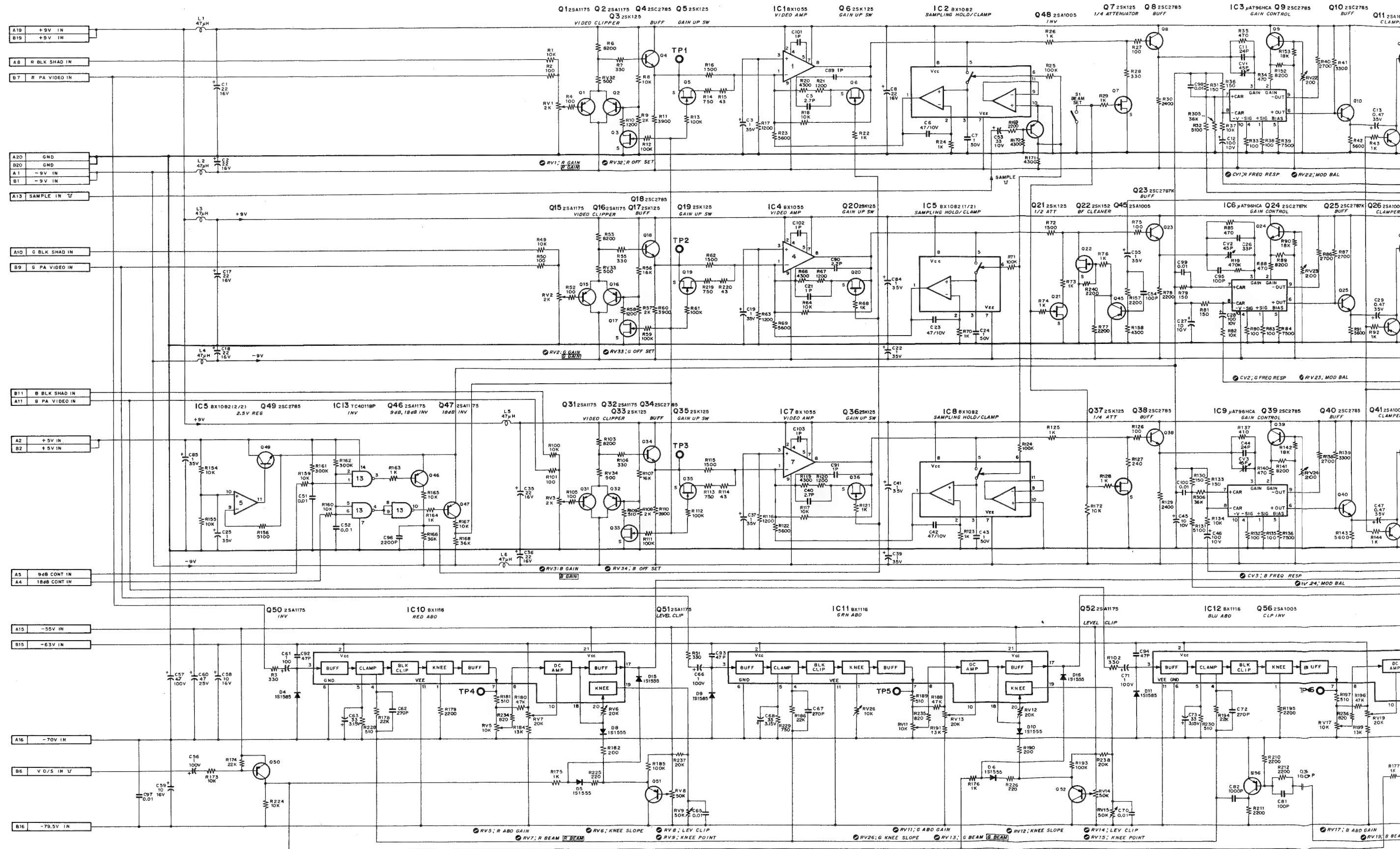
PARTS No. 1-608-884-15

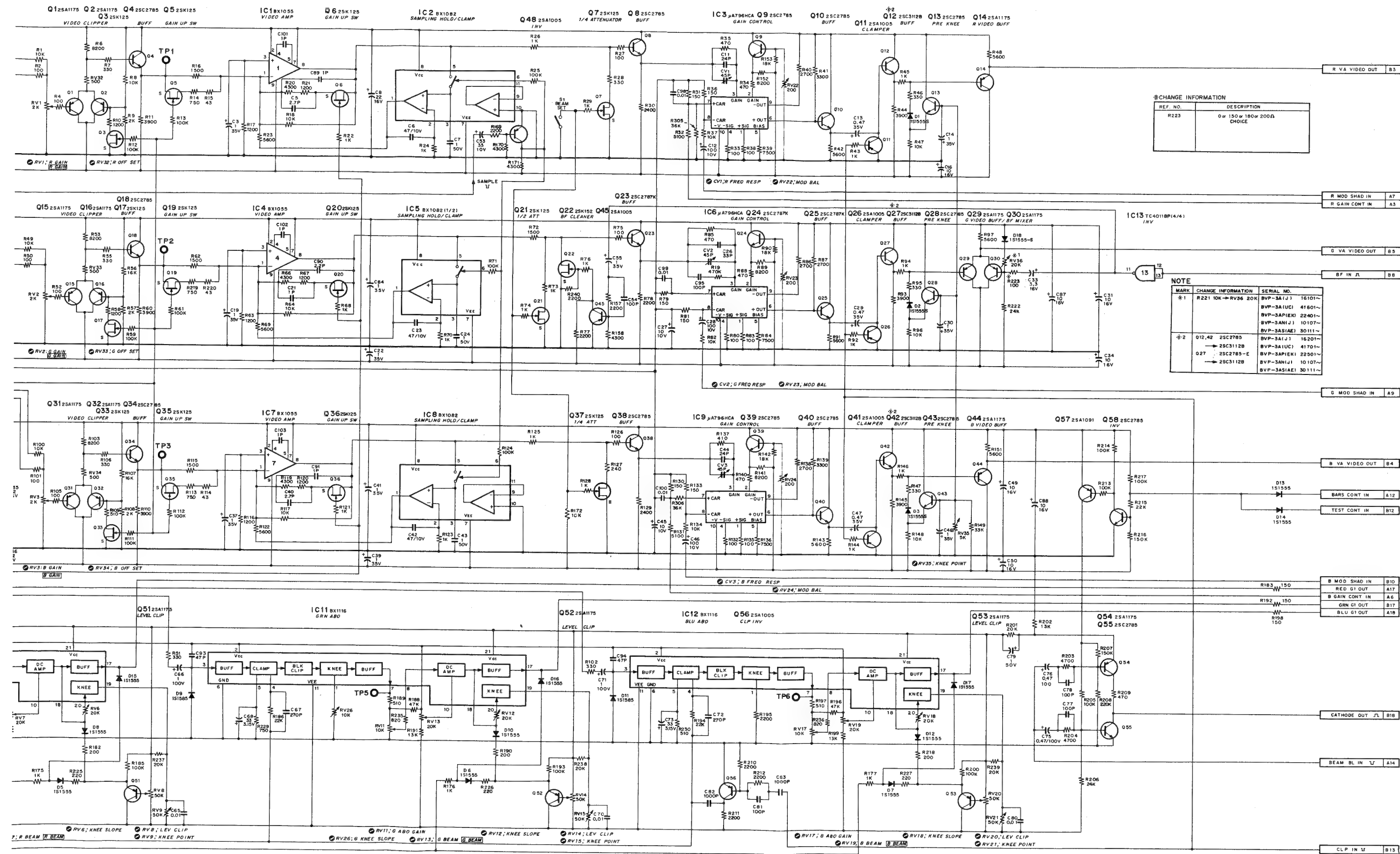


CV1 D 4
CV1 C 2
CV2 B 3
CV3 A 3
D1 D 3
D2 B 1
D3 A 1
D4 A 7
D5 D 8
D6 D 8
D7 D 5
D8 C 8
D9 A 7
D10 C 8
D11 A 7
D12 C 8
D13 B 7
D14 B 7
D15 C 8
D16 C 8
D17 C 8
D18 C 1
E1 B 7
IC1 C 3
IC2 C 3
IC3 C 2
IC4 B 4
IC5 B 4
IC6 B 2
IC7 A 4
IC8 A 4
IC9 A 2
IC10 B 8
IC11 B 8
IC12 B 8
IC13 D 1
Q1 C 5
Q2 C 5
Q3 C 5
Q4 C 4
Q5 C 4
Q6 C 4
Q7 C 3
Q8 C 2
Q9 C 2
Q10 D 2
Q11 D 2
Q12 D 2
Q13 D 2
Q14 D 3
Q15 B 5
Q16 B 5
Q17 B 5
Q18 B 5
Q19 B 5
Q20 B 4
Q21 B 4
Q22 B 4
Q23 B 4
Q24 B 3
Q25 B 2
Q26 B 2
Q27 B 2
Q28 B 1
Q29 B 1
Q30 B 1
Q31 A 5
Q32 A 5
Q33 A 5
Q34 A 5
Q35 A 5
Q36 A 4
Q37 A 3
Q38 A 2
Q39 A 1
Q40 A 1
Q41 A 1
Q42 A 1
Q43 A 1
Q44 B 1
Q45 B 1
Q46 D 1
Q47 D 1
Q48 C 3
Q49 B 3
Q50 C 8
Q51 D 8
Q52 D 8
Q53 D 8
Q54 B 8
Q55 B 8
Q56 B 8
Q57 A 7
Q58 A 7
RV1 A 5
RV2 A 6
RV3 A 6
RV5 B 8
RV6 D 8
RV7 A 8
RV8 D 8
RV9 D 8
RV10 B 8
RV11 B 8
RV12 D 8
RV13 A 8
RV14 D 8
RV15 D 8
RV16 B 8
RV17 B 8
RV18 D 8
RV19 A 8
RV20 D 8
RV21 D 8
RV22 B 3
RV23 A 3
RV24 A 3
RV25 A 8
RV26 A 8
RV27 C 4
RV28 B 8
RV29 A 6
RV30 A 1
RV31 A 1
RV32 B 1
TP1 C 4
TP2 B 5
TP3 A 5
TP4 B 8
TP5 B 8
TP6 C 8
TP7 A 8

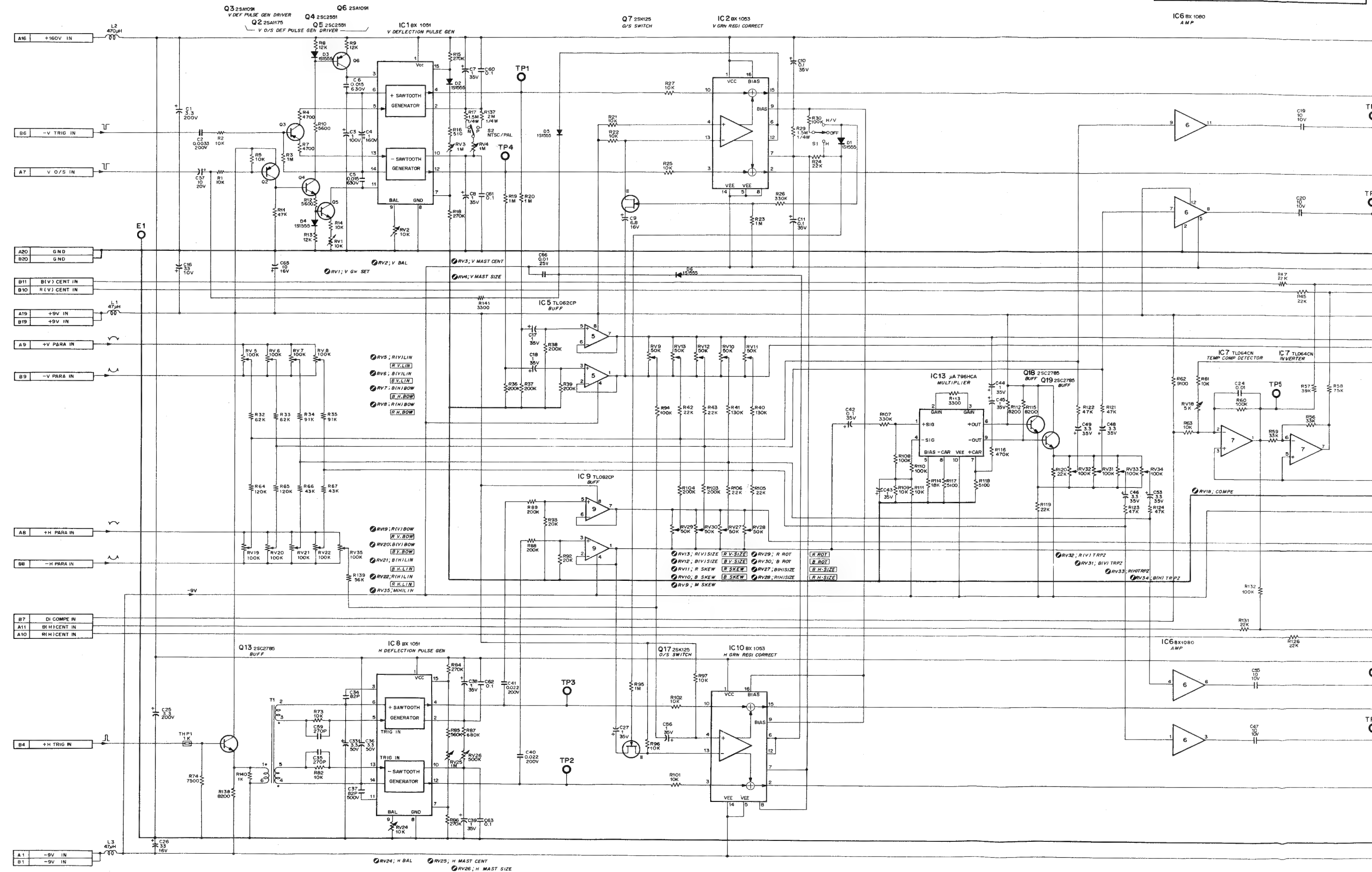
VA-14 BOARD
1-608-884-15
REV. 1
REV. 1.1
REV. 1.2
REV. 1.3
REV. 1.4
REV. 1.5

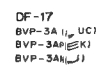
VA-14 BOARD



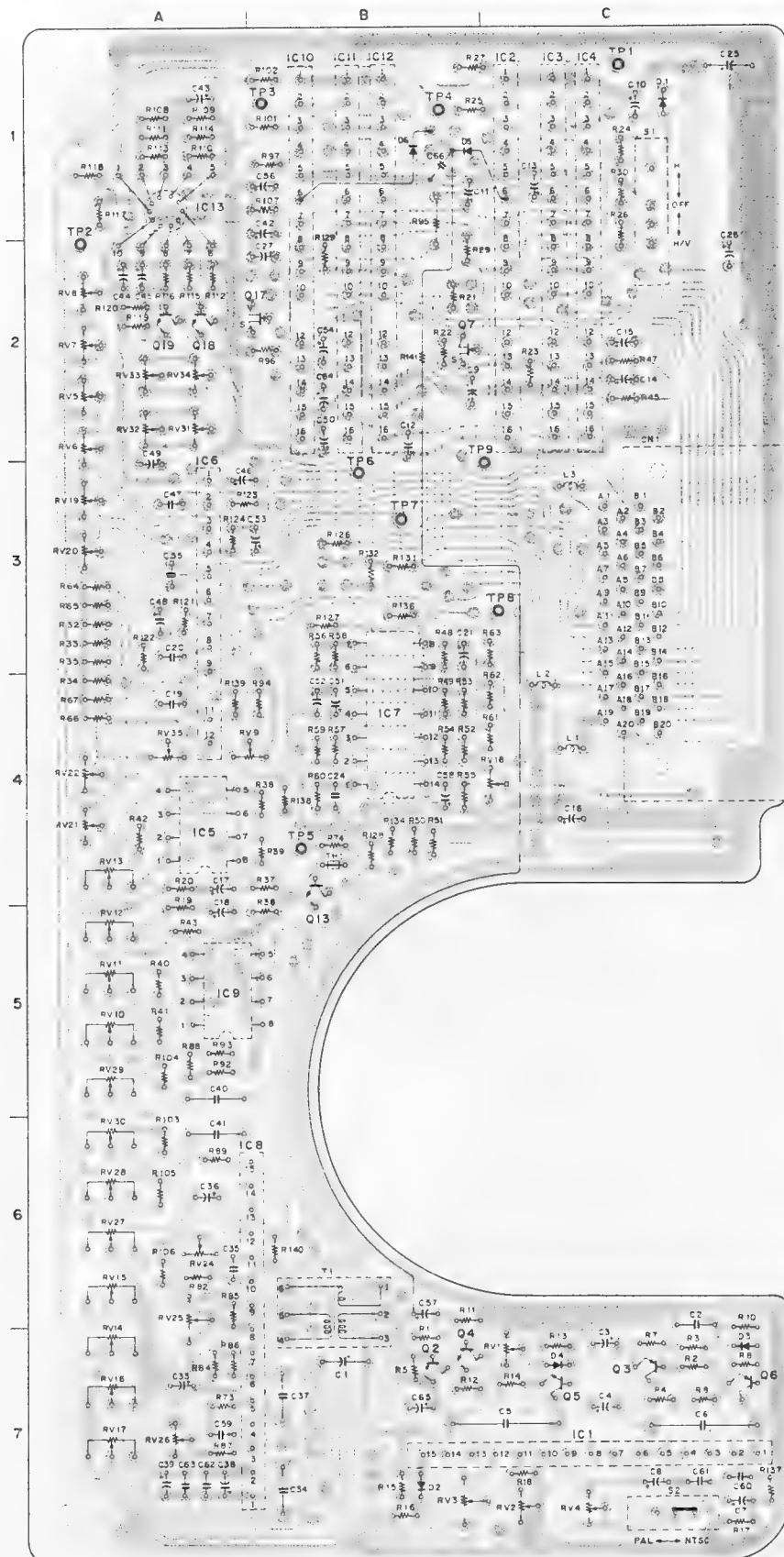


DF-17 BOARD





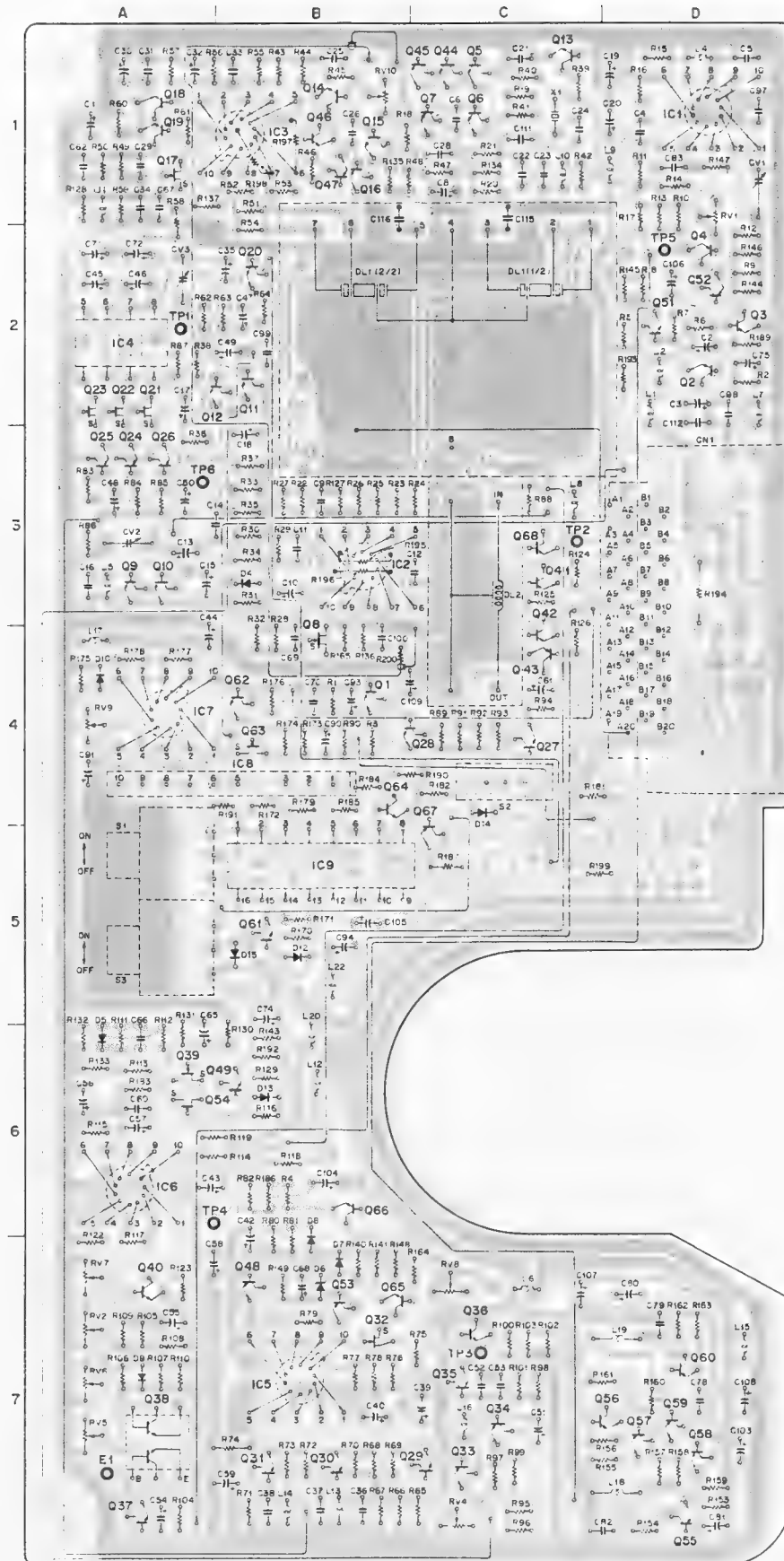
DF-17 BOARD
— SOLDERING SIDE —



- | | |
|------|-----|
| CN1 | C 3 |
| D1 | C 1 |
| D2 | B 7 |
| D3 | C 7 |
| D4 | C 7 |
| D5 | 1 |
| D6 | 1 |
| IC1 | C 7 |
| IC2 | C 2 |
| IC3 | C 2 |
| IC4 | C 2 |
| IC5 | A 4 |
| IC6 | A 3 |
| IC7 | B 4 |
| IC8 | B 7 |
| IC9 | A 5 |
| IC10 | B 2 |
| IC11 | B 2 |
| IC12 | B 2 |
| IC13 | A 1 |
| Q2 | B 7 |
| Q3 | C 7 |
| Q4 | B 7 |
| Q5 | C 7 |
| Q6 | C 7 |
| Q7 | B 2 |
| Q8 | B 4 |
| Q17 | B 2 |
| Q18 | A 2 |
| Q19 | A 2 |
| RV1 | C 7 |
| RV2 | C 7 |
| RV3 | B 7 |
| RV4 | C 7 |
| RV5 | A 2 |
| RV6 | A 2 |
| RV7 | A 2 |
| RV8 | A 2 |
| RV9 | B 4 |
| RV10 | A 5 |
| RV11 | A 5 |
| RV12 | A 5 |
| RV13 | A 4 |
| RV14 | A 7 |
| RV15 | A 6 |
| RV16 | A 7 |
| RV17 | A 7 |
| RV18 | C 4 |
| RV19 | A 3 |
| RV20 | A 3 |
| RV21 | A 4 |
| RV22 | A 4 |
| RV24 | A 6 |
| RV25 | A 6 |
| RV26 | A 7 |
| RV27 | A 6 |
| RV28 | A 6 |
| RV29 | A 5 |
| RV30 | A 6 |
| RV31 | A 2 |
| RV32 | A 2 |
| RV33 | A 2 |
| RV34 | A 2 |
| RV35 | A 4 |
| S1 | C 1 |
| S2 | C 7 |
| T1 | B 6 |
| TH1 | B 4 |
| TP1 | C 1 |
| TP2 | A 2 |
| TP3 | B 1 |
| TP4 | B 1 |
| TP5 | B 4 |
| TP6 | B 3 |
| TP7 | B 3 |
| TP8 | C 1 |
| TP9 | C 3 |

DF-17 BOARD --
--SOLDERING SIDE--
REV. 1
NOTES: 1. (U)CI
2. (U)CI
3. (U)CI
4. (U)CI
5. (U)CI
6. (U)CI
7. (U)CI
8. (U)CI
9. (U)CI
10. (U)CI
11. (U)CI
12. (U)CI
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23. (U)CI
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90. (U)CI
91. (U)CI
92. (U)CI
93. (U)CI
94. (U)CI
95. (U)CI
96. (U)CI
97. (U)CI
98. (U)CI
99. (U)CI
100. (U)CI

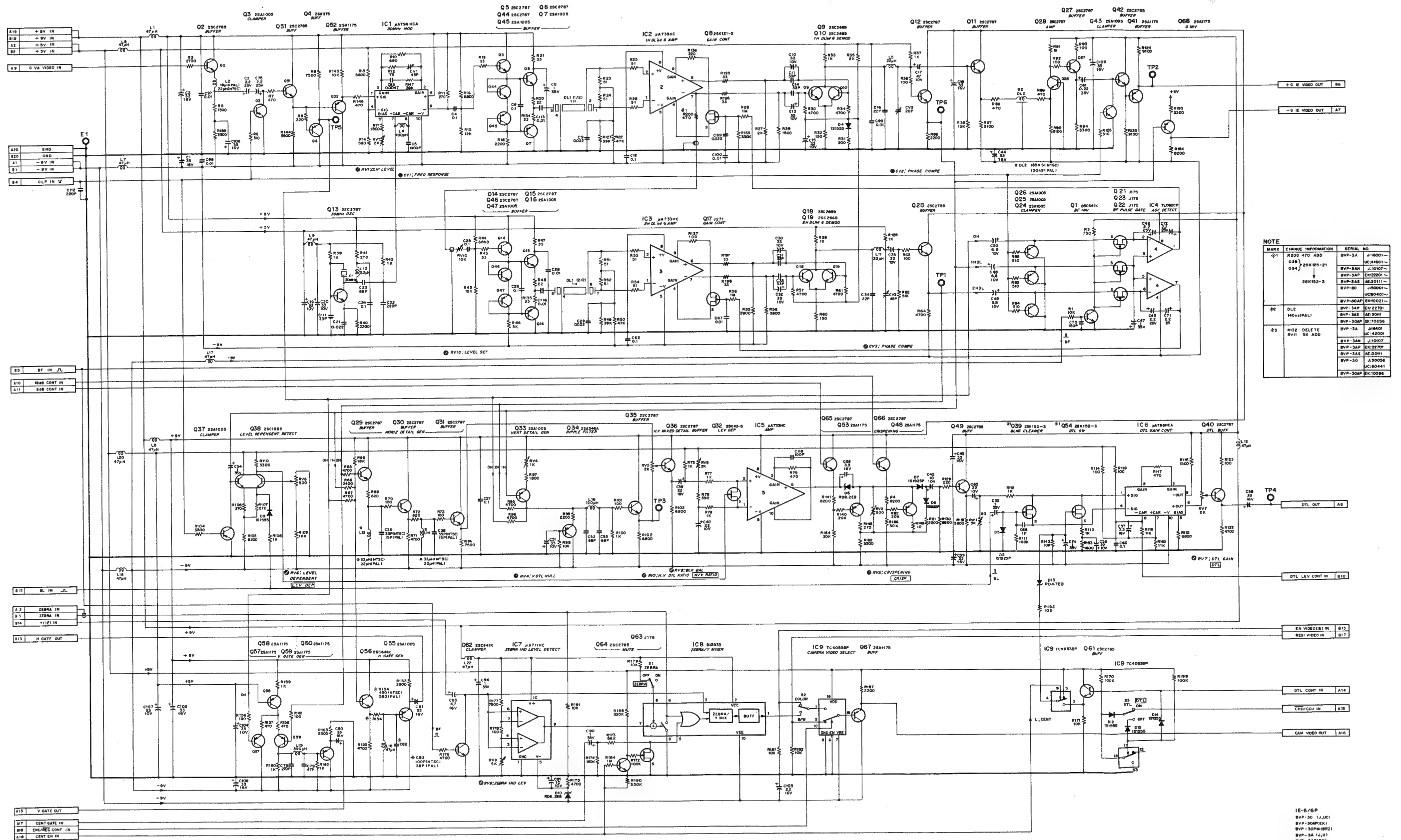
IE-6 BOARD - SOLDERING SIDE -



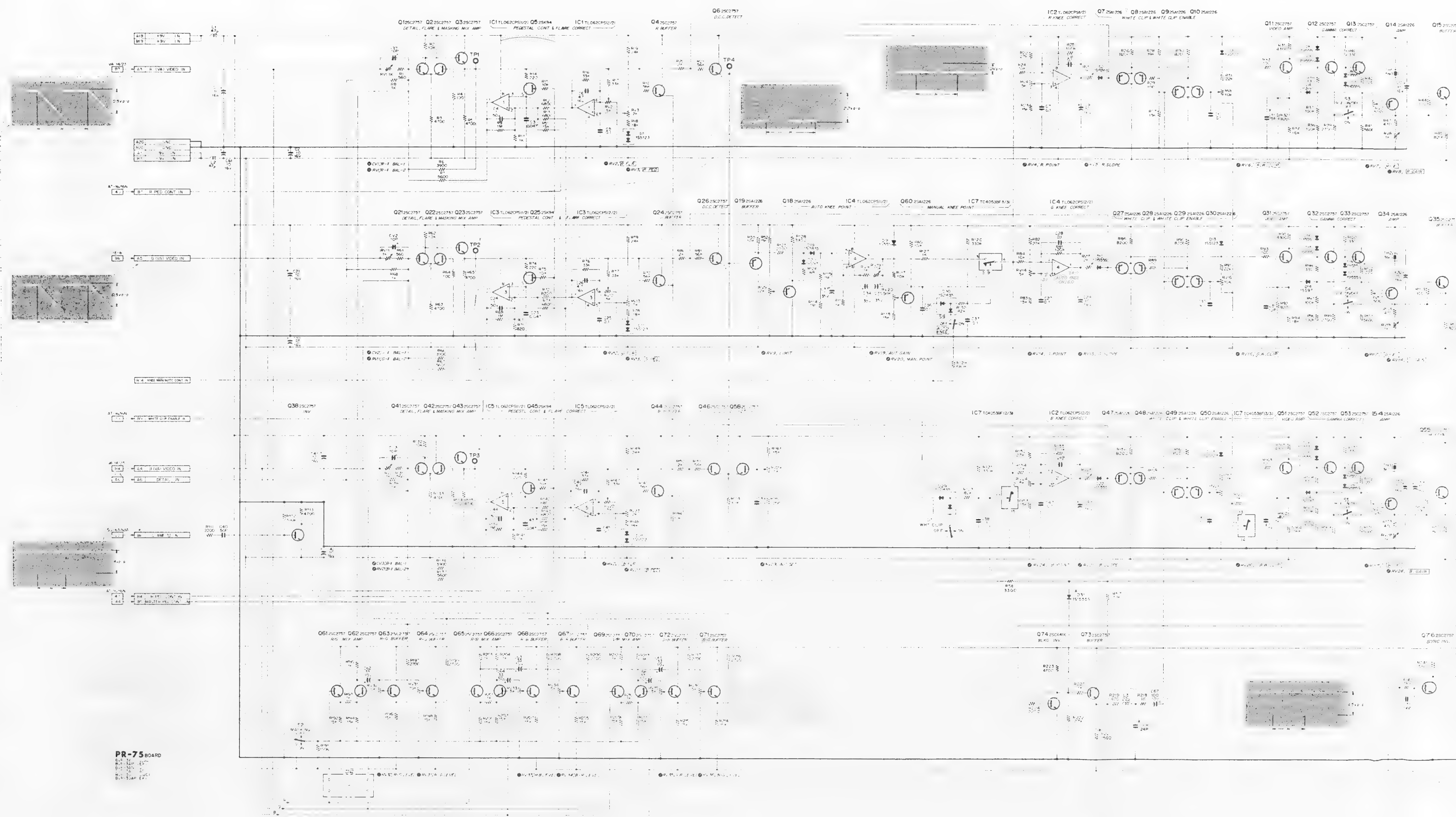
IE-6/6P BOARD
 1. 608-886-16
 2. 608-886-16
 3. 608-886-16
 4. 608-886-16
 5. 608-886-16
 6. 608-886-16
 7. 608-886-16
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 48. 608-886-16
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 86. 608-886-16
 87. 608-886-16
 88. 608-886-16
 89. 608-886-16
 90. 608-886-16
 91. 608-886-16
 92. 608-886-16
 93. 608-886-16
 94. 608-886-16
 95. 608-886-16
 96. 608-886-16
 97. 608-886-16
 98. 608-886-16
 99. 608-886-16
 100. 608-886-16

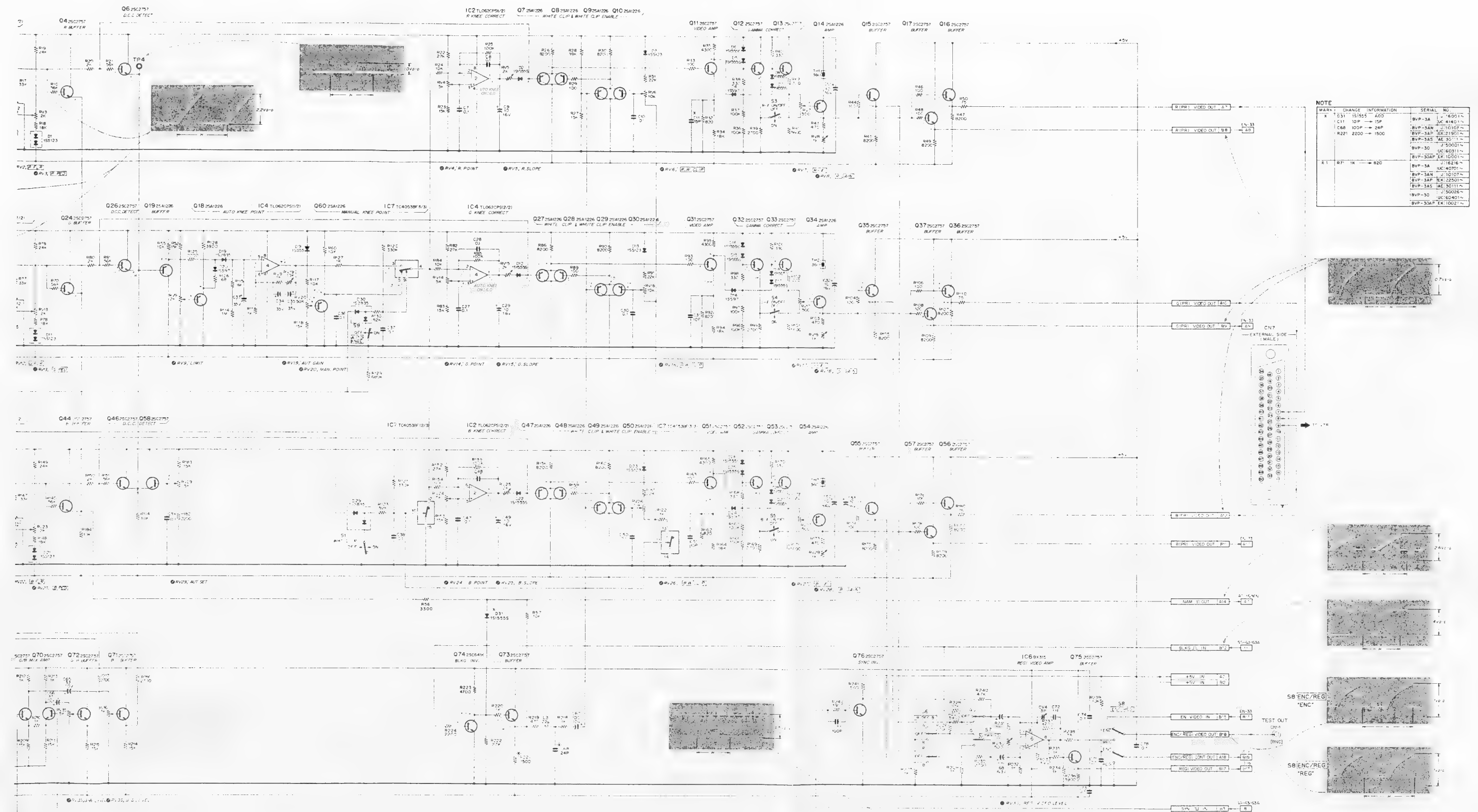


IE-6P BOARD

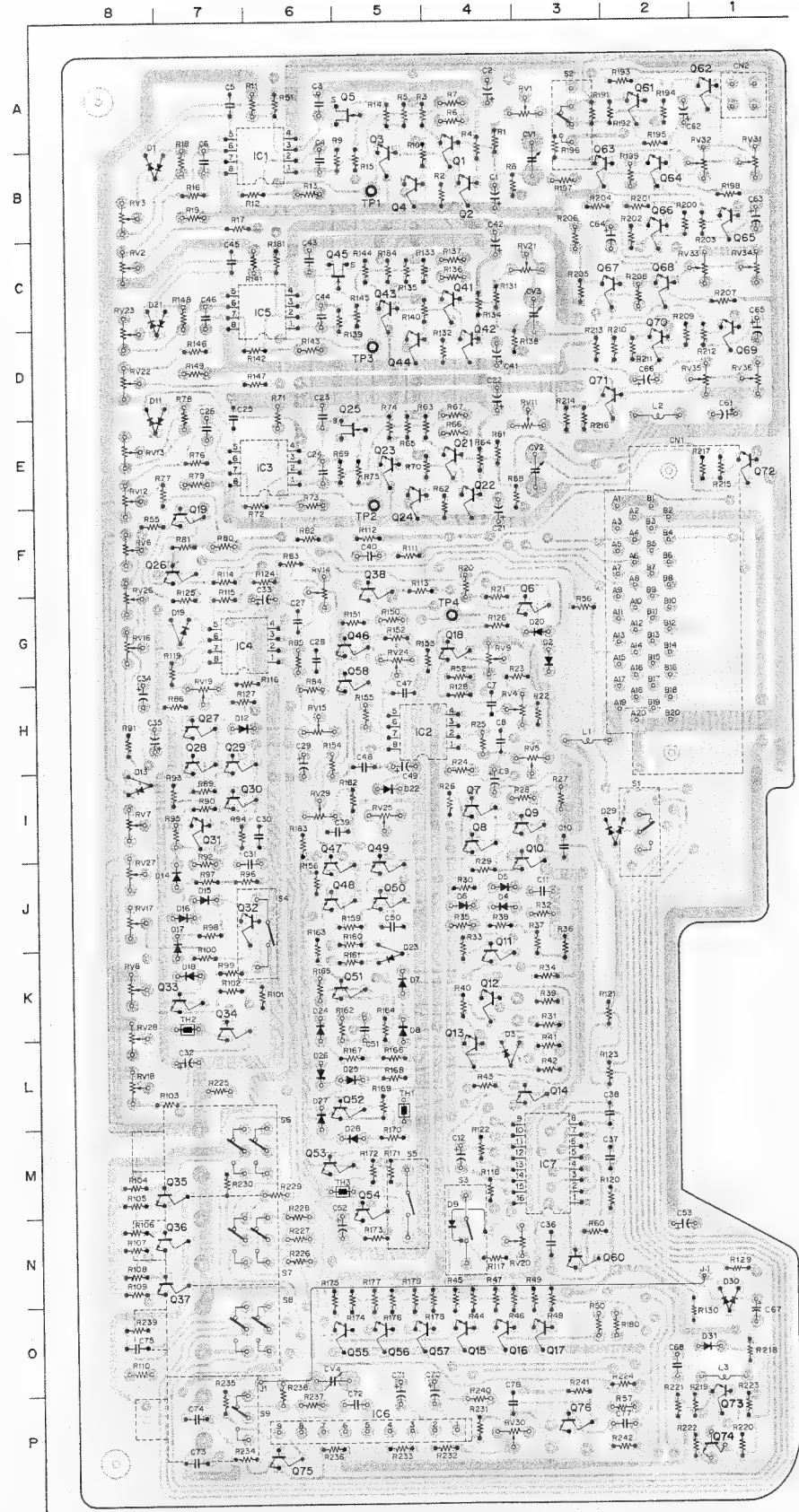


PR-75 BOARD





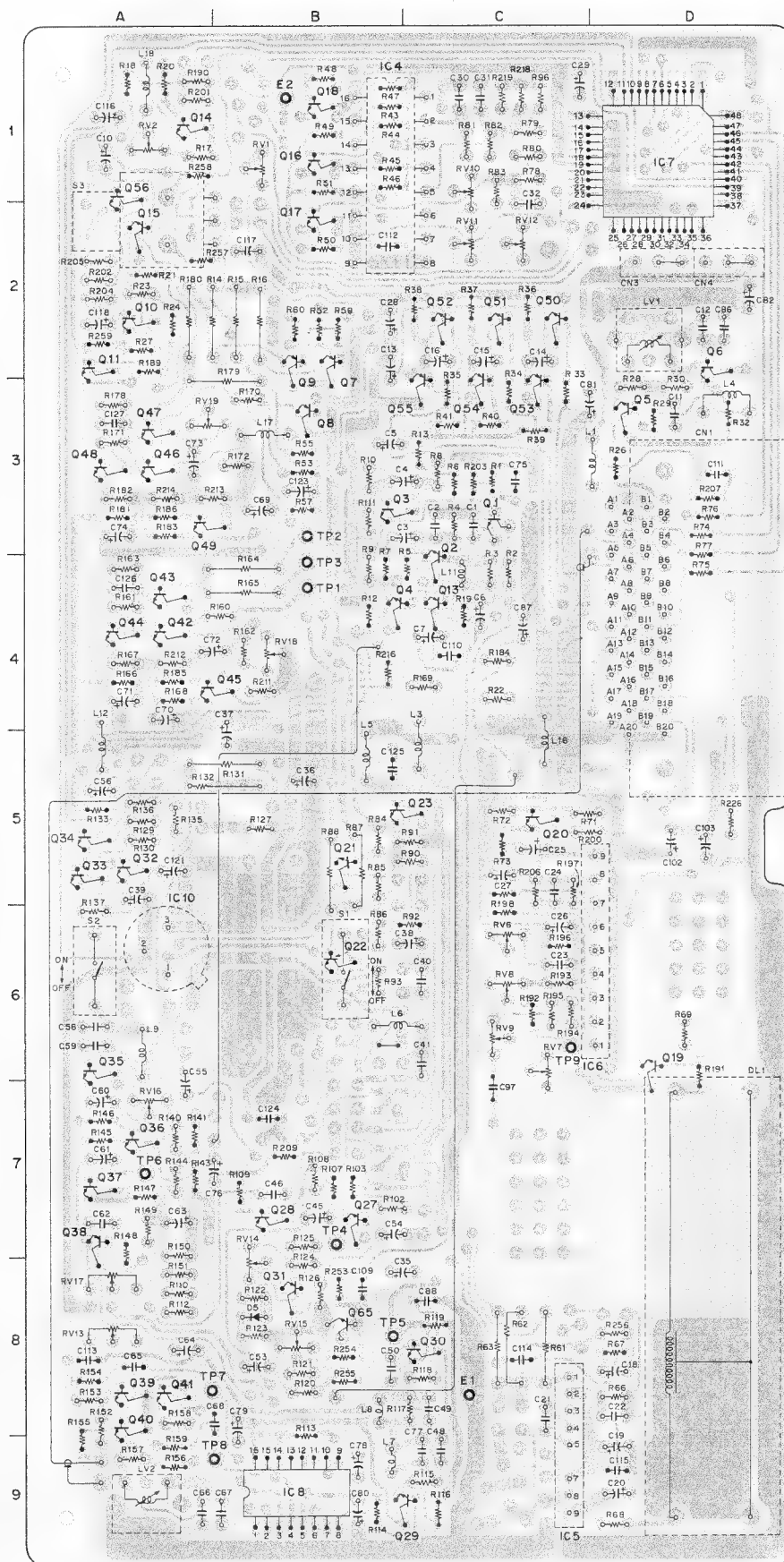
PR-75 BOARD
— SOLDERING SIDE —



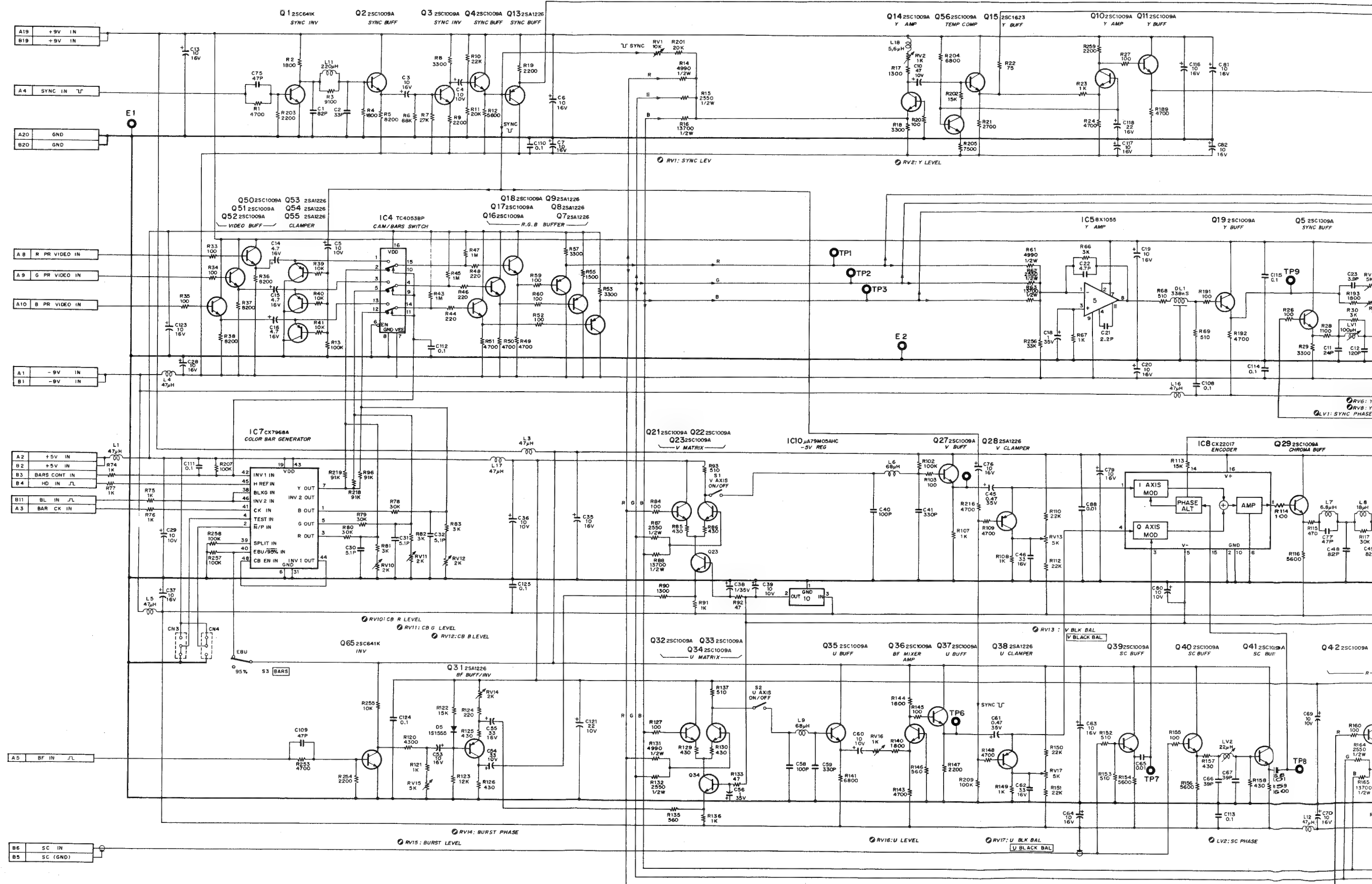
CN1	G-2	RV1	A-3
CN2	A-1	RV2	C-8
		RV3	B-8
CV1	B-3	RV4	H-3
CV2	E-3	RV5	H-3
CV3	C-3		
CV4	O-8	RV6	F-8
		RV7	I-8
D1	B-8	RV8	K-8
D2	G-3	RV9	G-4
D3	L-4	RV11	E-3
D4	J-4		
D5	J-4	RV12	E-8
		RV13	E-8
D6	J-4	RV14	F-6
D7	K-5	RV15	H-6
D8	K-5	RV16	G-8
D9	N-4		
D11	D-8	RV17	J-8
		RV18	L-8
D12	H-7	RV19	H-7
D13	I-8	RV20	N-4
D14	J-7	RV21	C-3
D15	J-7		
D16	J-7	RV22	D-8
		RV23	D-8
D17	J-7	RV24	G-5
D18	K-7	RV25	I-5
D19	J-7	RV26	G-8
D20	G-3		
D21	C-8	RV27	J-8
		RV28	K-8
D22	I-5	RV29	I-6
D23	K-5	RV30	P-4
D24	K-8	RV31	B-1
D25	L-5		
D26	L-6	RV32	B-1
		RV33	C-1
D27	L-6	RV34	C-1
D28	M-5	RV35	D-1
D29	I-2	RV36	D-1
D30	D-1		
D31	K-2	S1	I-2
		S2	A-3
IC1	B-6	S3	N-4
IC2	H-4	S4	J-6
IC3	E-6	S5	M-5
IC4	G-7		
IC5	C-8	S6	M-7
IC6	P-5	S7	N-7
IC7	M-3	S8	O-7
		S9	P-7
Q1	A-4	TH1	L-5
Q2	B-4	TH2	K-7
Q3	B-5	TH3	M-6
Q4	B-5		
Q5	A-5	TP1	B-5
		TP2	E-5
Q6	G-3	TP3	D-5
Q7	I-4	TP4	G-4
Q8	I-4		
Q9	I-3		
Q10	J-3		
Q11	K-4		
Q12	K-4		
Q13	L-4		
Q14	L-3		
Q15	O-4		
Q16	O-4		
Q17	O-3		
Q18	G-4		
Q19	F-7		
Q21	E-4		
Q22	E-4		
Q23	E-5		
Q24	E-5		
Q25	E-5		
Q26	F-7		
Q27	H-7		
Q28	H-7		
Q29	H-7		
Q30	I-7		
Q31	I-7		
Q32	J-7		
Q33	K-7		
Q34	K-7		
Q35	M-8		
Q36	N-8		
Q37	N-8		
Q38	F-5		
Q41	C-4		
Q42	D-4		
Q43	C-5		
Q44	D-5		
Q46	G-5		
Q47	J-5		
Q48	J-8		
Q49	J-5		
Q50	J-5		
Q51	K-6		
Q52	L-6		
Q53	M-6		
Q54	M-5		
Q55	O-6		
Q56	O-5		
Q57	O-5		
Q58	G-5		
Q60	N-3		
Q61	A-2		
Q62	A-1		
Q63	B-2		
Q64	B-2		
Q65	B-1		
Q66	B-2		
Q67	C-2		
Q68	C-2		
Q69	D-1		
Q70	D-2		
Q71	D-2		
Q72	E-1		
Q73	P-1		
Q74	P-1		
Q75	P-6		
Q76	P-3		

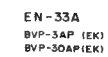
— SOLDERING SIDE —
PR-75 BOARD
1-617-204-12, 13
BVP-3A (JUC)
BVP-3AP (JUC)
BVP-3AN (JUC)
BVP-3AS (JUC)
BVP-3AP (JUC)

EN-33A BOARD — SOLDERING SIDE —

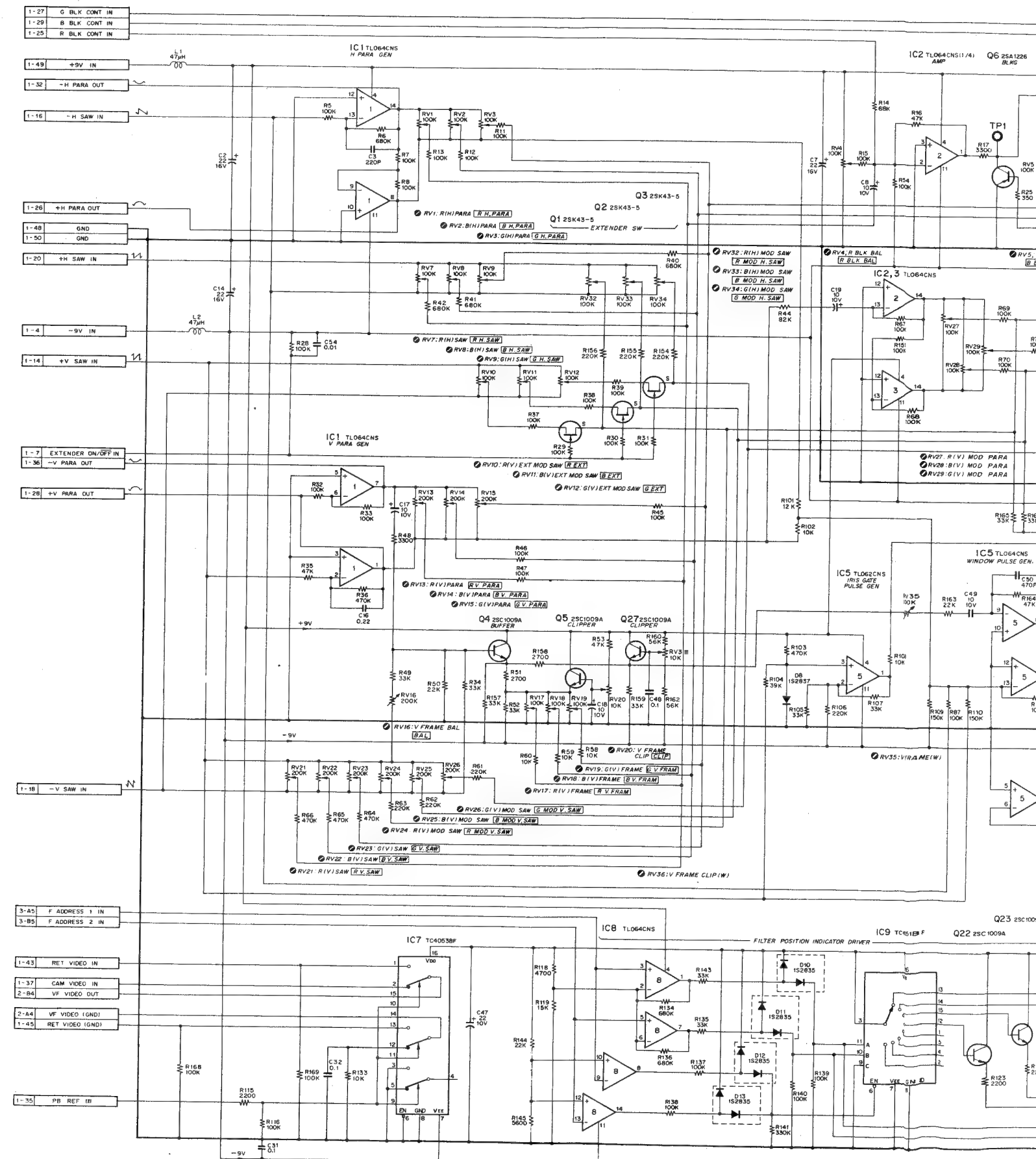


CN1	D-3
CN3	D-2
CN4	D-2
D5	B-8
DL1	D-8
E1	C-8
E2	B-1
IC4	B-1
IC5	C-9
IC6	D-6
IC7	D-1
IC8	B-9
IC10	A-6
LV1	D-2
LV2	A-9
Q1	C-3
Q2	C-4
Q3	B-3
Q4	B-4
Q5	D-3
Q6	D-2
Q7	B-2
Q8	B-3
Q9	B-2
Q10	A-2
Q11	A-2
Q12	C-4
Q13	C-4
Q14	A-1
Q15	A-2
Q16	B-1
Q17	B-2
Q18	B-1
Q19	D-6
Q20	C-5
Q21	B-5
Q22	B-6
Q23	C-5
Q24	B-7
Q25	C-9
Q26	C-8
Q27	B-7
Q28	B-7
Q29	C-9
Q30	C-8
Q31	B-8
Q32	A-6
Q33	A-5
Q34	A-5
Q35	A-6
Q36	A-7
Q37	A-7
Q38	A-7
Q39	A-8
Q40	A-8
Q41	A-8
Q42	A-4
Q43	A-4
Q44	A-4
Q45	A-4
Q46	A-3
Q47	A-3
Q48	A-3
Q49	A-3
Q50	C-2
Q51	C-2
Q52	C-3
Q53	C-3
Q54	A-1
Q55	B-8
RV1	B-1
RV2	A-1
RV3	C-6
RV4	C-6
RV5	C-6
RV6	C-6
RV7	C-1
RV8	B-8
RV9	B-8
RV10	B-8
RV11	B-8
RV12	B-8
RV13	B-8
RV14	B-8
RV15	B-8
RV16	B-8
RV17	B-8
RV18	B-8
RV19	A-3
S1	B-6
S2	A-6
S3	A-2
TP1	B-4
TP2	B-3
TP3	B-4
TP4	B-7
TP5	B-8
TP6	A-7
TP7	A-8
TP8	A-9
TP9	C-6

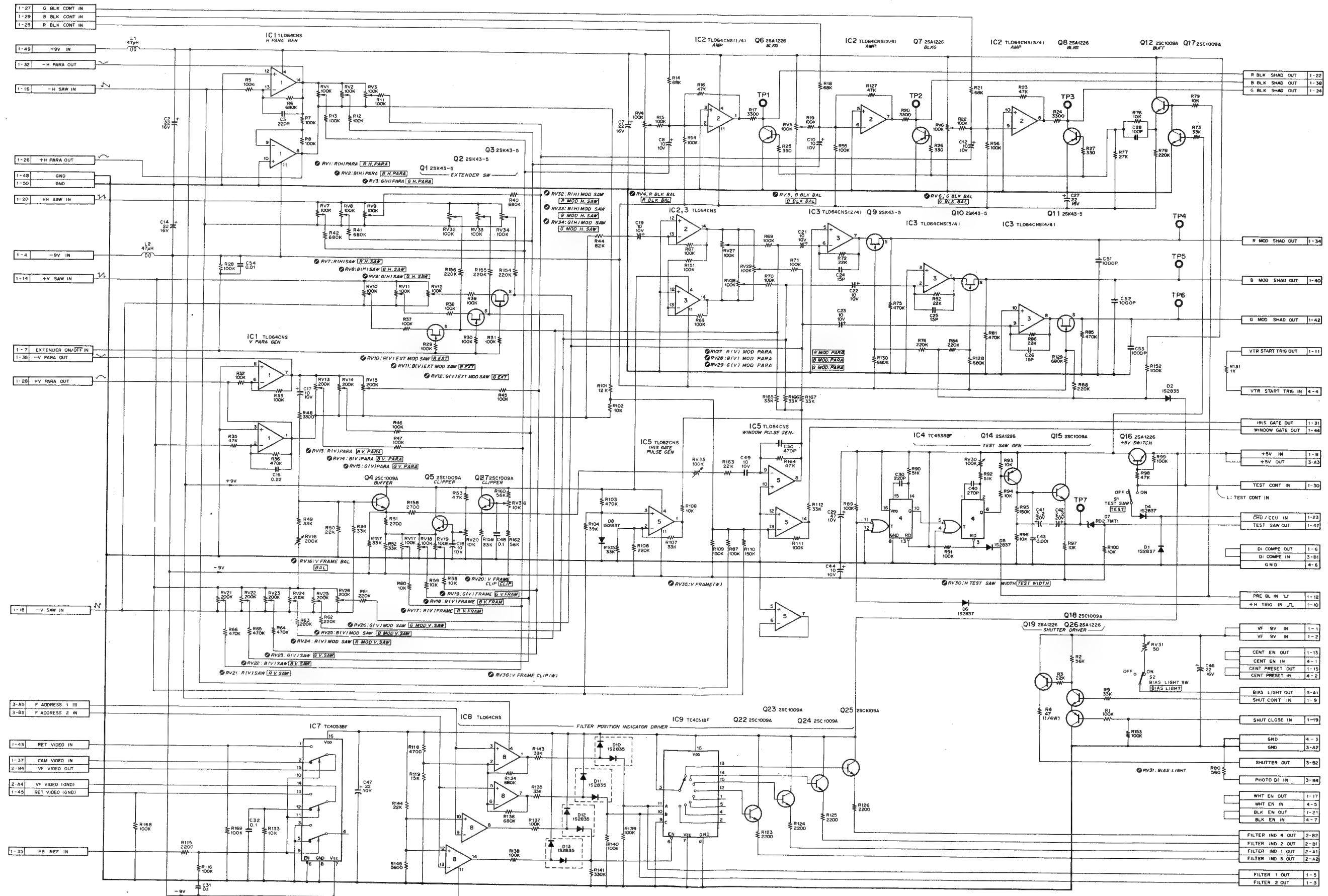




SH-8A BOARD

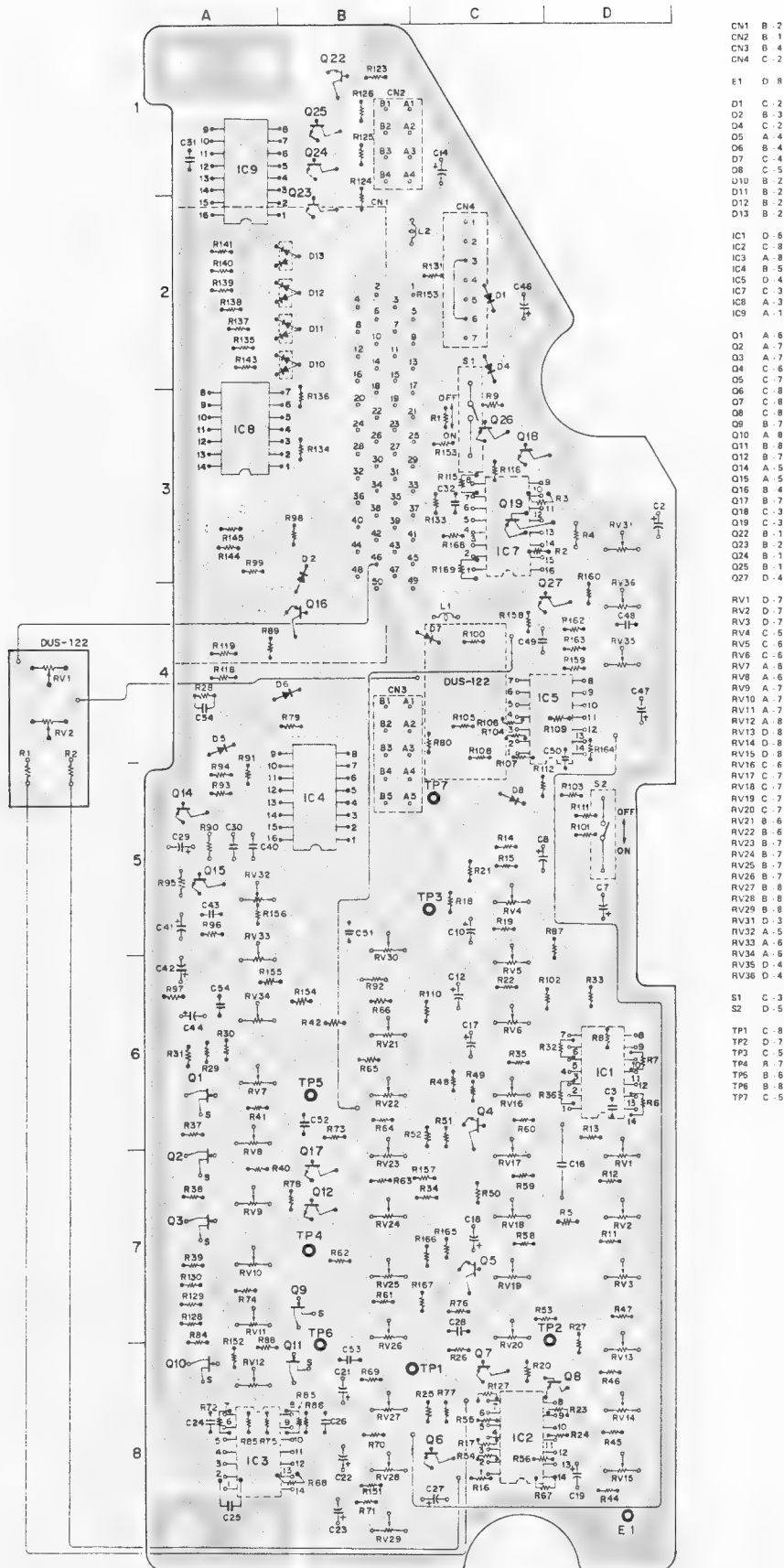


SH-8A BOARD



SH-8A BOARD
— SOLDERING SIDE —

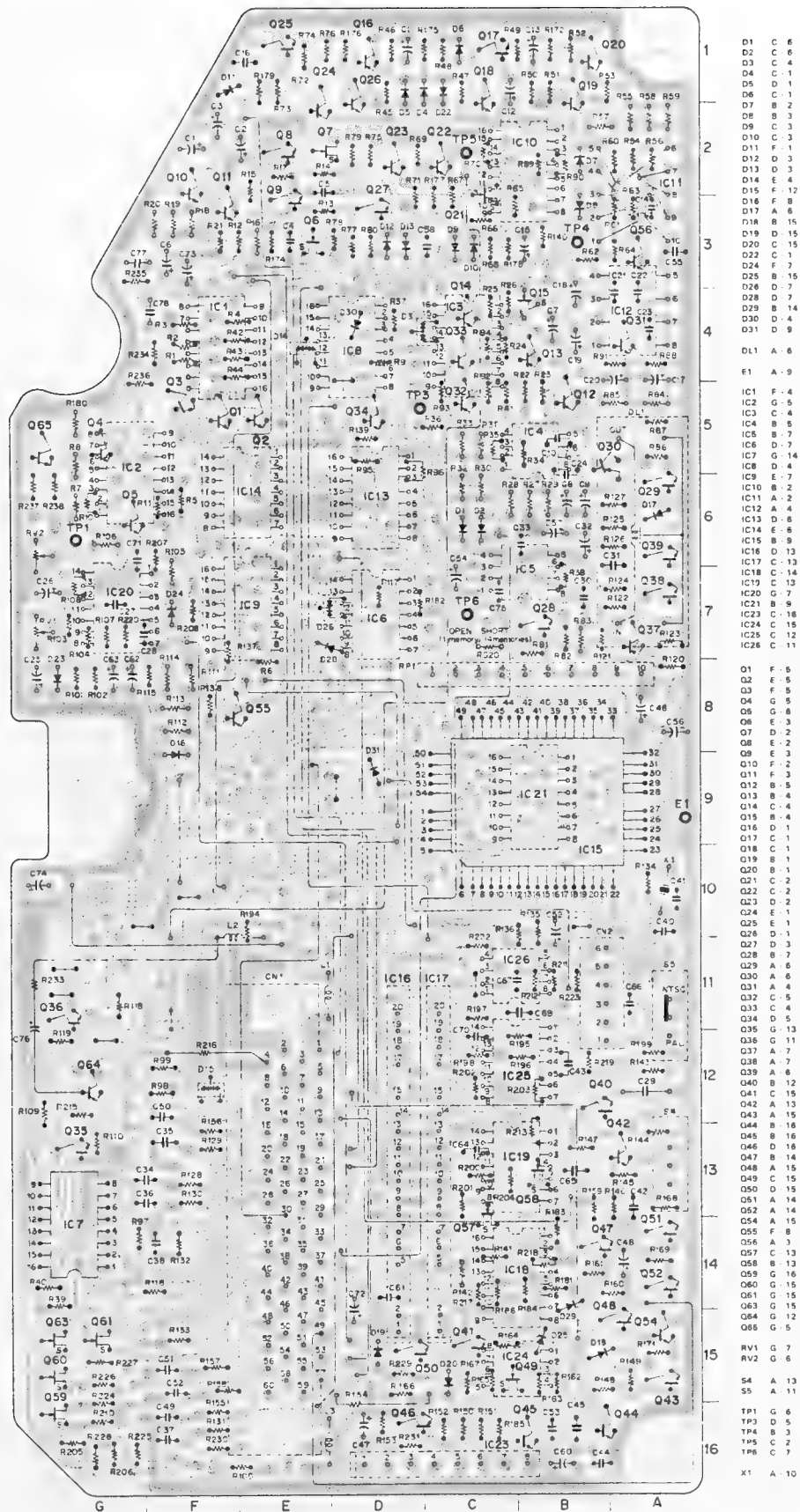
PARTS NO. 1-608-890-14



SH-8A BOARD-14
BVP-24 14C1
BVP-34A 121
BVP-34P 15K1
BVP-34S 14E1

AT-16/16N

AT-16/16N BOARD
— SOLDERING SIDE —

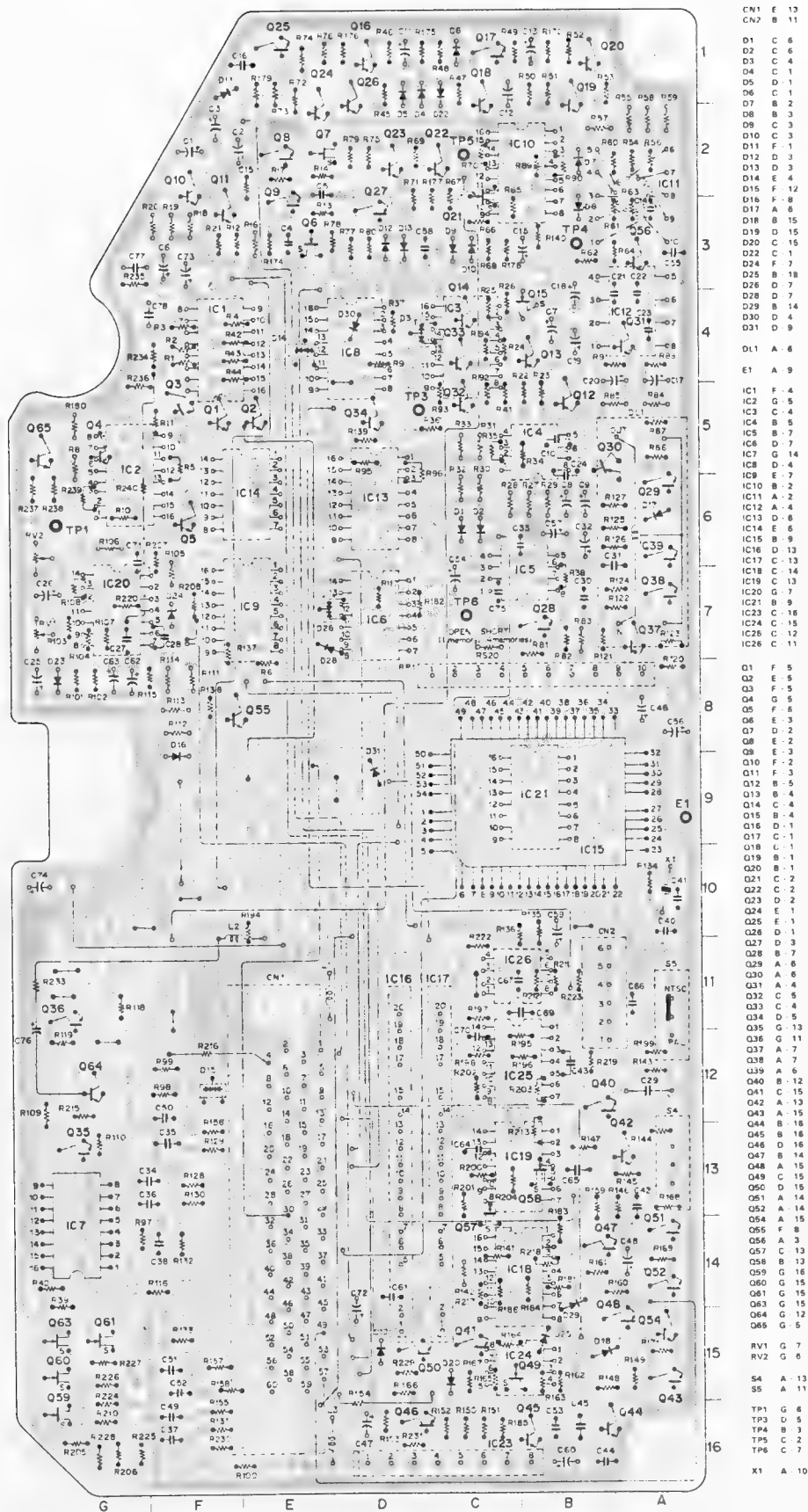


AT-16 BOARD	AT-16N BOARD
- SOLDERING SIDE -	- SOLDERING SIDE -
1-6/2 029-15	1-6/2 029-15
CA-30(J,UC)	BVP-3AN(J)
CA-30P(1EX)	
BVP-30(J,UC)	
BVP-30AMP(1EX)	
BVP-30PM(BRZ)	
BVP-3A(J,UC)	
BVP-3AP(1EX)	
BVP-3AS(AF)	

AT-16/16N

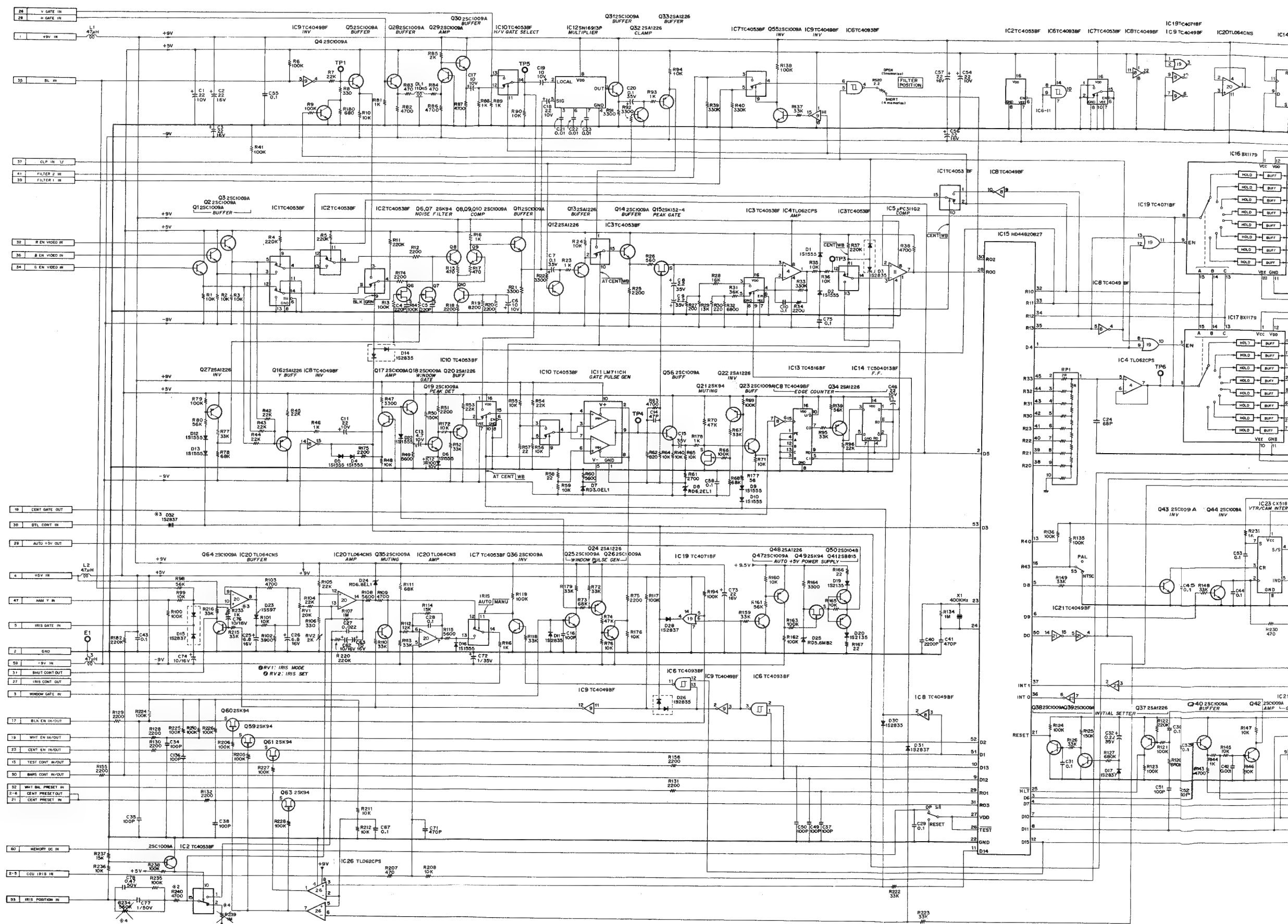
AT-16/16N BOARD

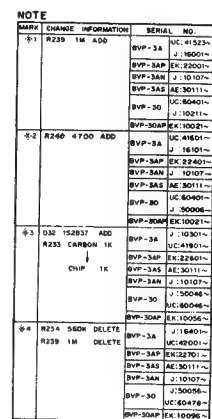
— SOLDERING SIDE —



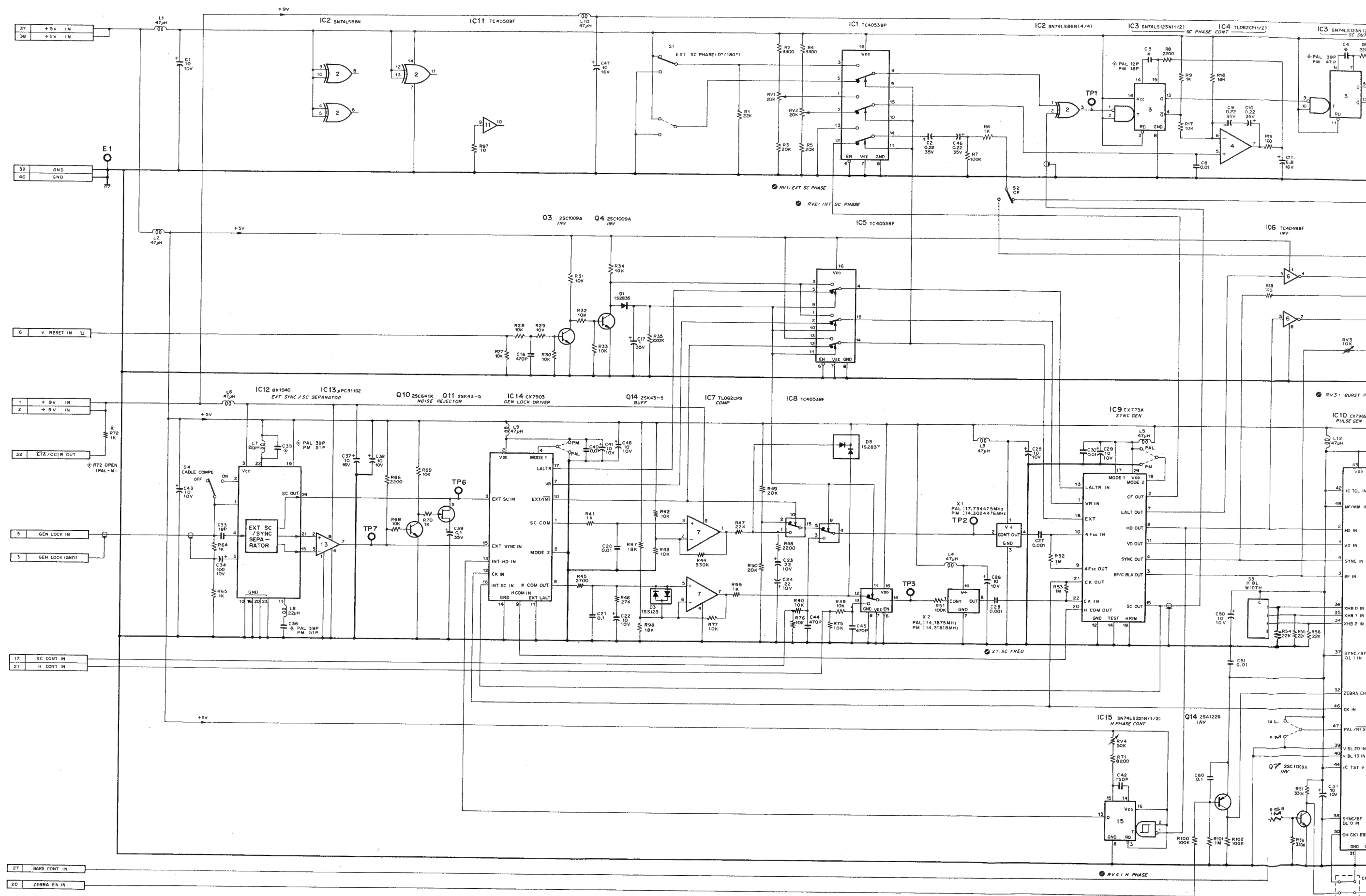
AT-16 BOARD — SOLDERING SIDE — 1-61Z-029-16,17 CA-30/30L(JUC) RA-30P/30PL(EK) CA-30PM(BRZ) BVP 30(JUC) BV* 30AP(LK) BVP-30PM(BRZ) BVP-3A1(JUC) BVP-3AP(EK) BVP-3AS1AEI	AT-16N BOARD — SOLDERING SIDE — 1-61Z-029-16,17 BVP-3AN(J)
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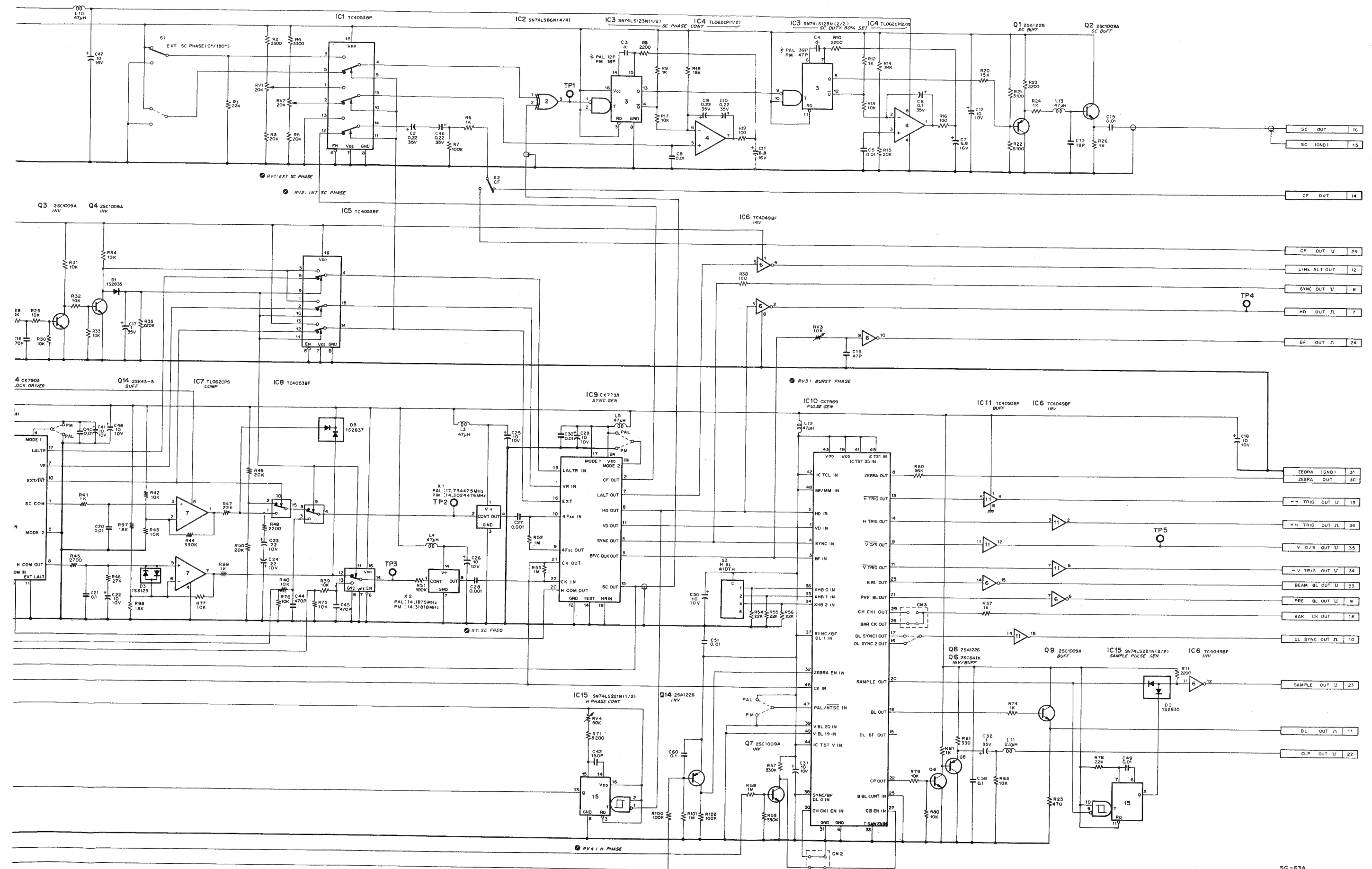
AT-16 BOARD





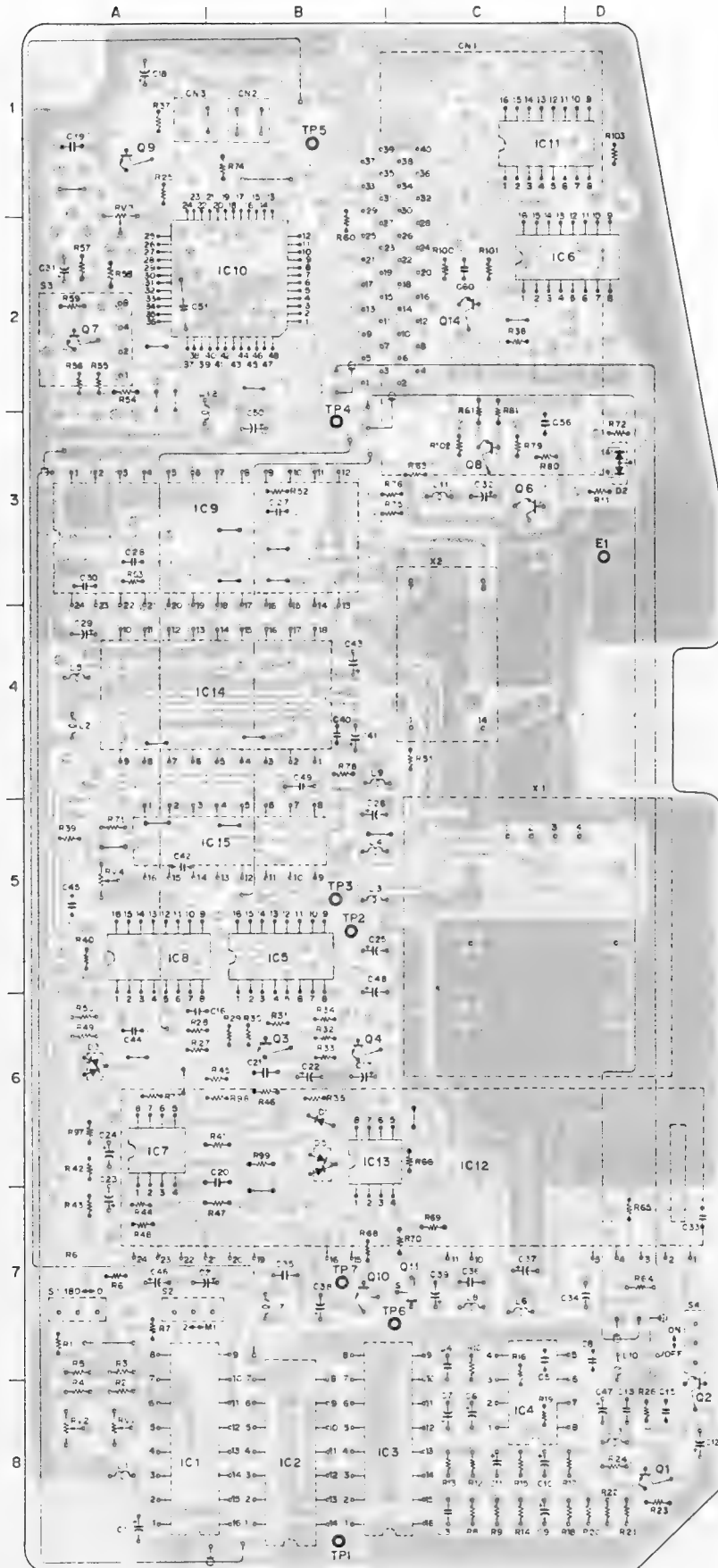
AT-16 AT-16N
BVP-30 (UC) BVP-30A (E)
BVP-30A (E) BVP-30A (E)
BVP-30A (E) BVP-30A (E)
BVP-30A (E) BVP-30A (E)
BVP-30A (E) BVP-30A (E)





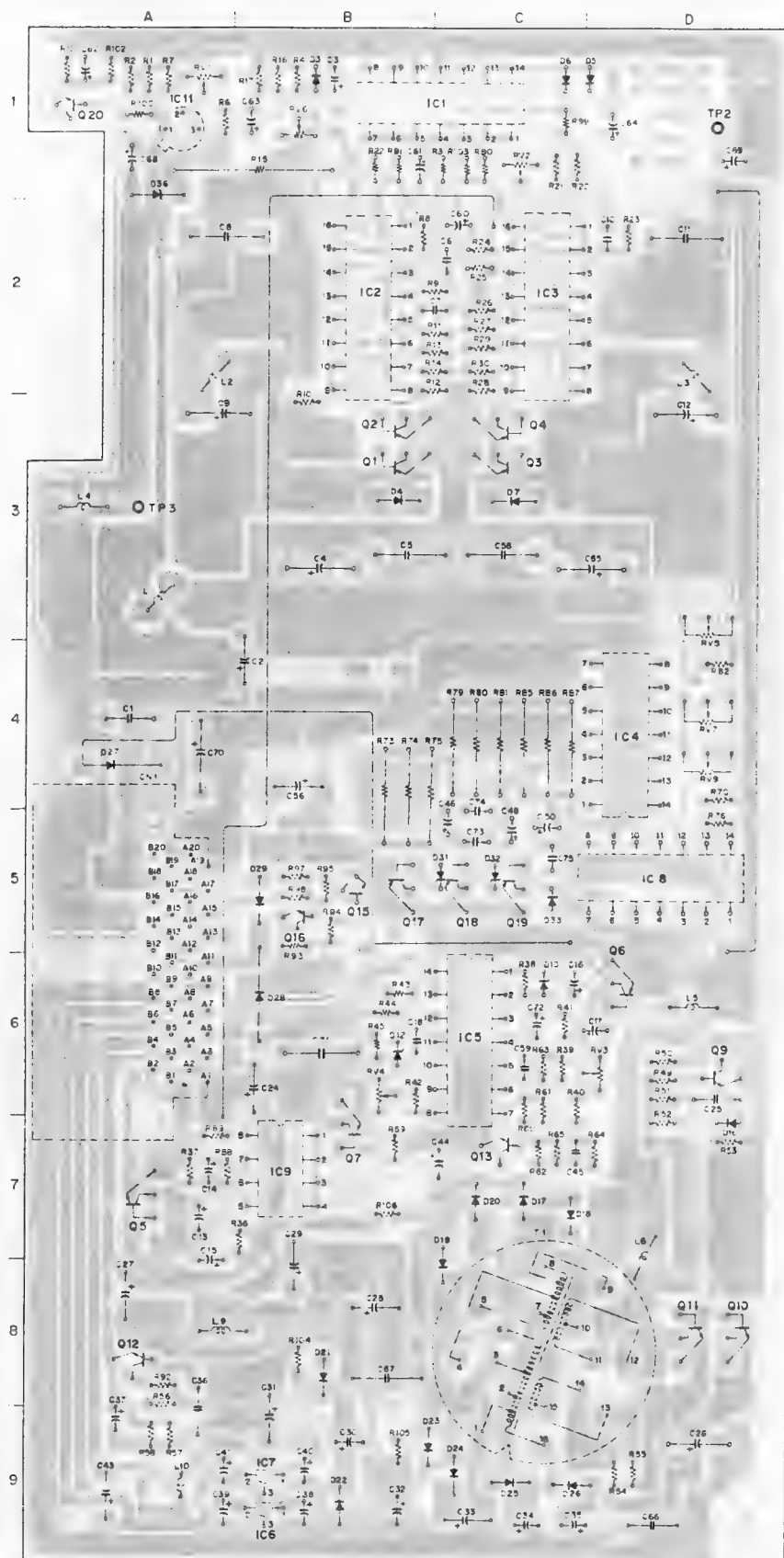
Parts No. 1-608-892-25

SG-63A BOARD
— SOLDERING SIDE —



- | | |
|------|-----|
| CN1 | C 2 |
| CN2 | B 1 |
| CN3 | A 1 |
| D1 | B 6 |
| D2 | D 3 |
| D3 | A 6 |
| D5 | B 6 |
| E1 | D 3 |
| IC1 | A 8 |
| IC2 | B 8 |
| IC3 | C 8 |
| IC4 | C 8 |
| IC5 | B 5 |
| IC6 | D 2 |
| IC7 | A 6 |
| IC8 | A 5 |
| IC9 | B 3 |
| IC10 | B 2 |
| IC11 | C 1 |
| IC12 | C 6 |
| IC13 | B 6 |
| IC14 | B 4 |
| IC15 | B 5 |
| Q1 | D 8 |
| Q2 | D 8 |
| Q3 | B 6 |
| Q4 | B 6 |
| Q6 | C 3 |
| Q7 | A 2 |
| Q8 | C 3 |
| Q9 | A 1 |
| Q10 | B 7 |
| Q11 | C 7 |
| Q14 | C 2 |
| RV1 | A 8 |
| RV2 | A 8 |
| RV3 | A 1 |
| RV4 | A 5 |
| S1 | A 7 |
| S2 | A 7 |
| S3 | A 2 |
| S4 | D 7 |
| TP1 | B 8 |
| TP2 | B 5 |
| TP3 | B 5 |
| TP4 | B 3 |
| TP5 | B 1 |
| TP6 | B 7 |
| TP7 | B 7 |
| X1 | B 5 |
| X2 | B 4 |

SG-63A BOARD
1-608-892-25
BY P-SAP (EXT)



CN1 A.5

D3 B.1
D4 B.3
D5 D.1
D6 C.1
D7 C.3
D10 C.6
D12 B.6
D16 D.6
D17 C.7
D18 C.7
D19 C.7
D20 C.7
D21 B.8
D22 B.9
D23 B.9
D24 D.9
D25 D.9
D26 D.9
D27 A.4
D28 B.6
D29 B.5
D31 C.5
D32 C.5
D33 C.5
D36 A.1

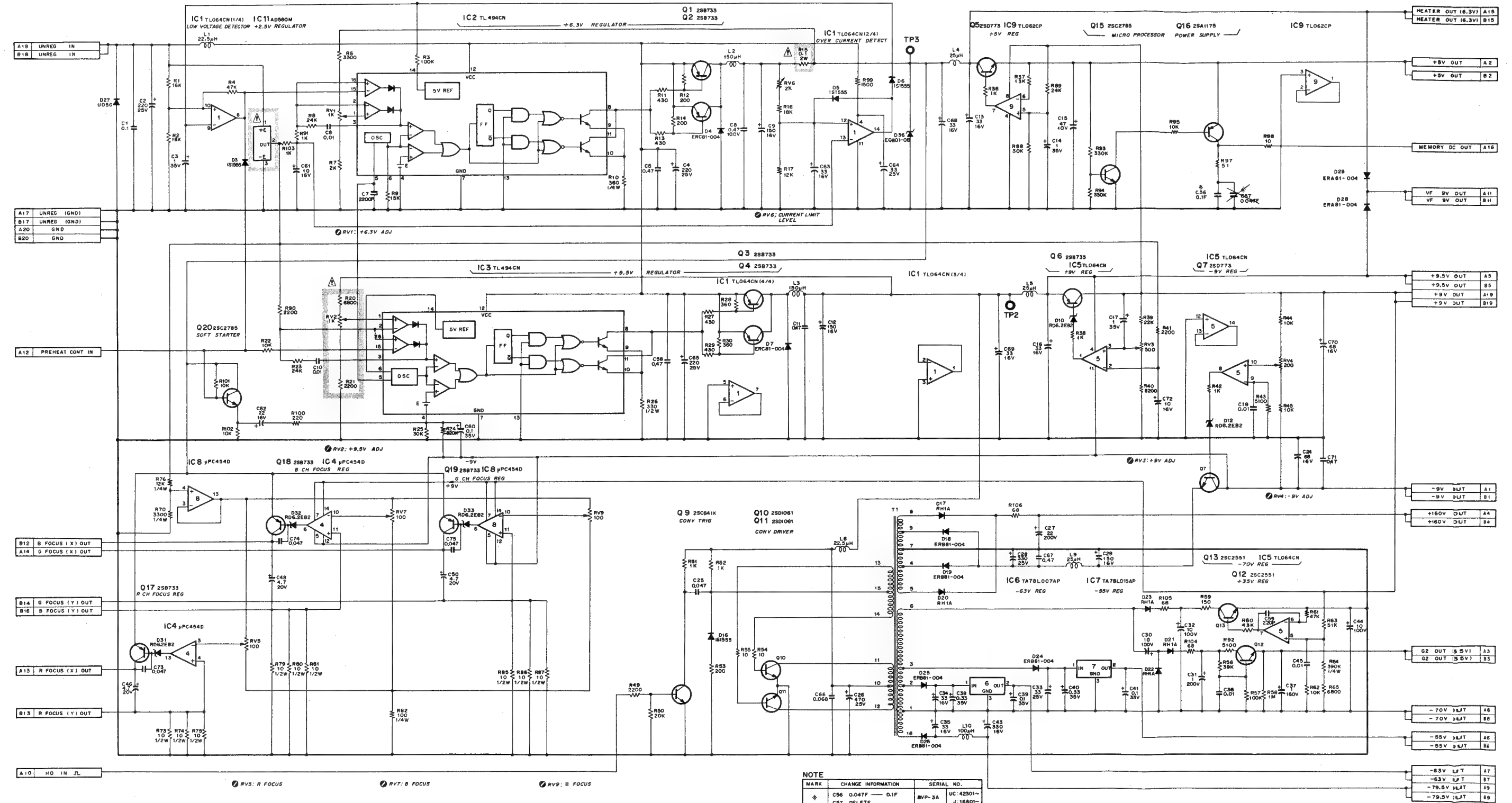
IC1 B.1
IC2 B.2
IC3 C.2
IC4 D.4
IC5 C.8
IC6 B.9
IC7 B.9
IC8 D.5
IC9 B.7
IC11 A.1

Q1 B.3
Q2 B.3
Q3 C.3
Q4 C.3
Q5 A.7
Q6 D.8
Q7 B.7
Q9 D.8
Q10 D.8
Q11 D.8
Q12 A.8
Q13 C.7
Q15 B.5
Q16 B.5
Q17 B.5
Q18 C.5
Q19 C.5
Q20 A.1

RV1 A.1
RV2 C.1
RV3 D.6
RV4 B.6
RV5 D.3
RV6 B.1
RV7 D.4
RV8 D.4
T1 C.8
TP2 D.1
TP3 A.3

PW-93 BOARD
1-608-889-16
BVP-1
BVP-3P
BVP-3A(BAC)
BVP-3A(LUCI)
BVP-3AN(1)
BVP-3AP(EN)

PW-93 BOARD



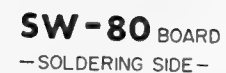
MARK	CHANGE INFORMATION	SERIAL NO.
1	C56 0.047F — 0.1F	BVP-3A UC:42501~
2	C57 DELETE	BVP-3A J:16601~
3		BVP-3AP EK:22811~
4		BVP-3AN J:10107~
5		BVP-3AS AE:30111~

NOTE:

The shaded and Δ -marked components are critical to safety. Replace only with same components as specified.

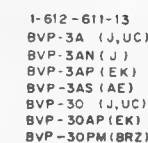
LP-28, MC-19
SW-80, VF-22

LP-28 BOARD
-SOLDERING SIDE-



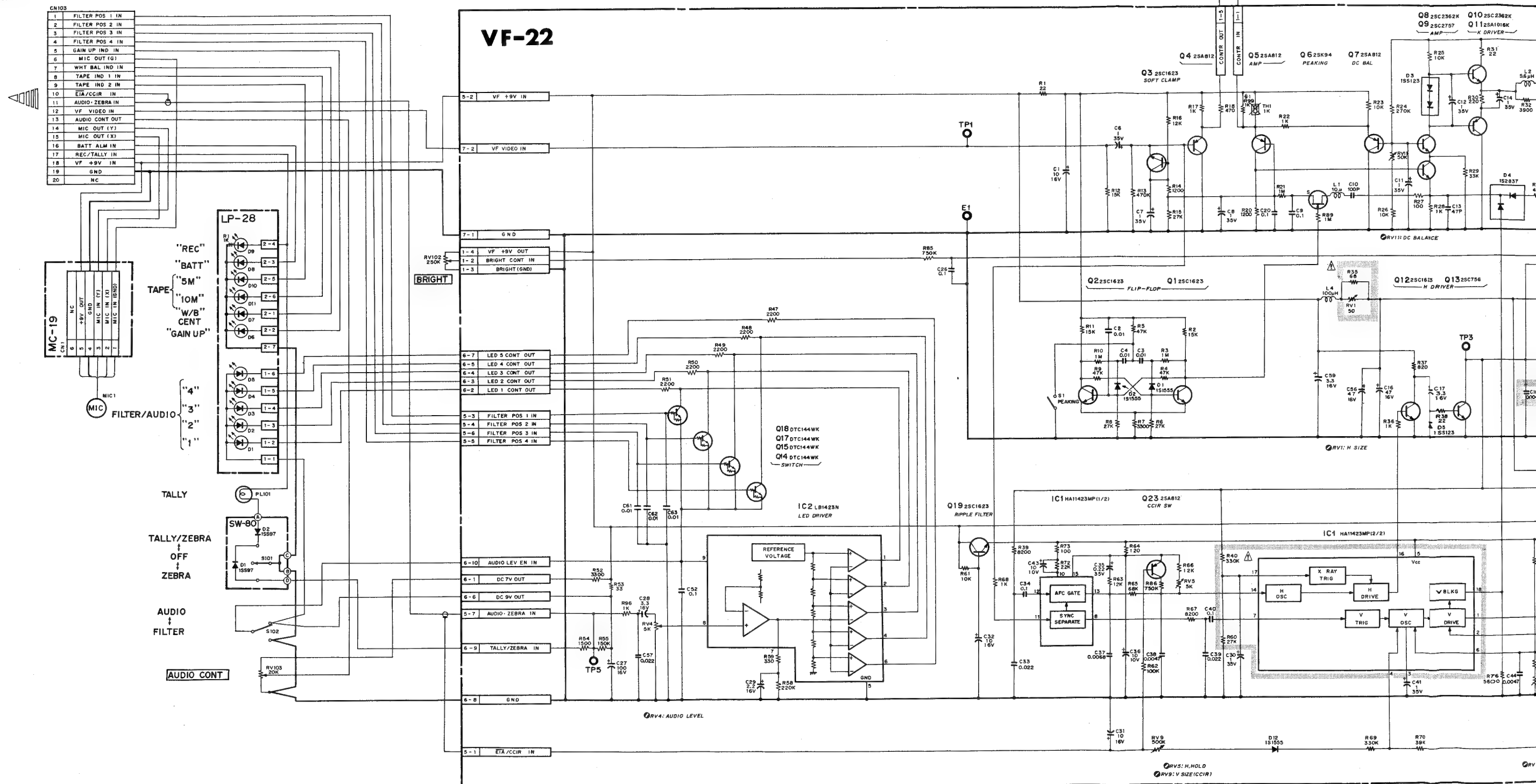
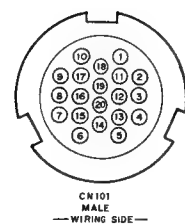
Parts. No. 1-612-611-13

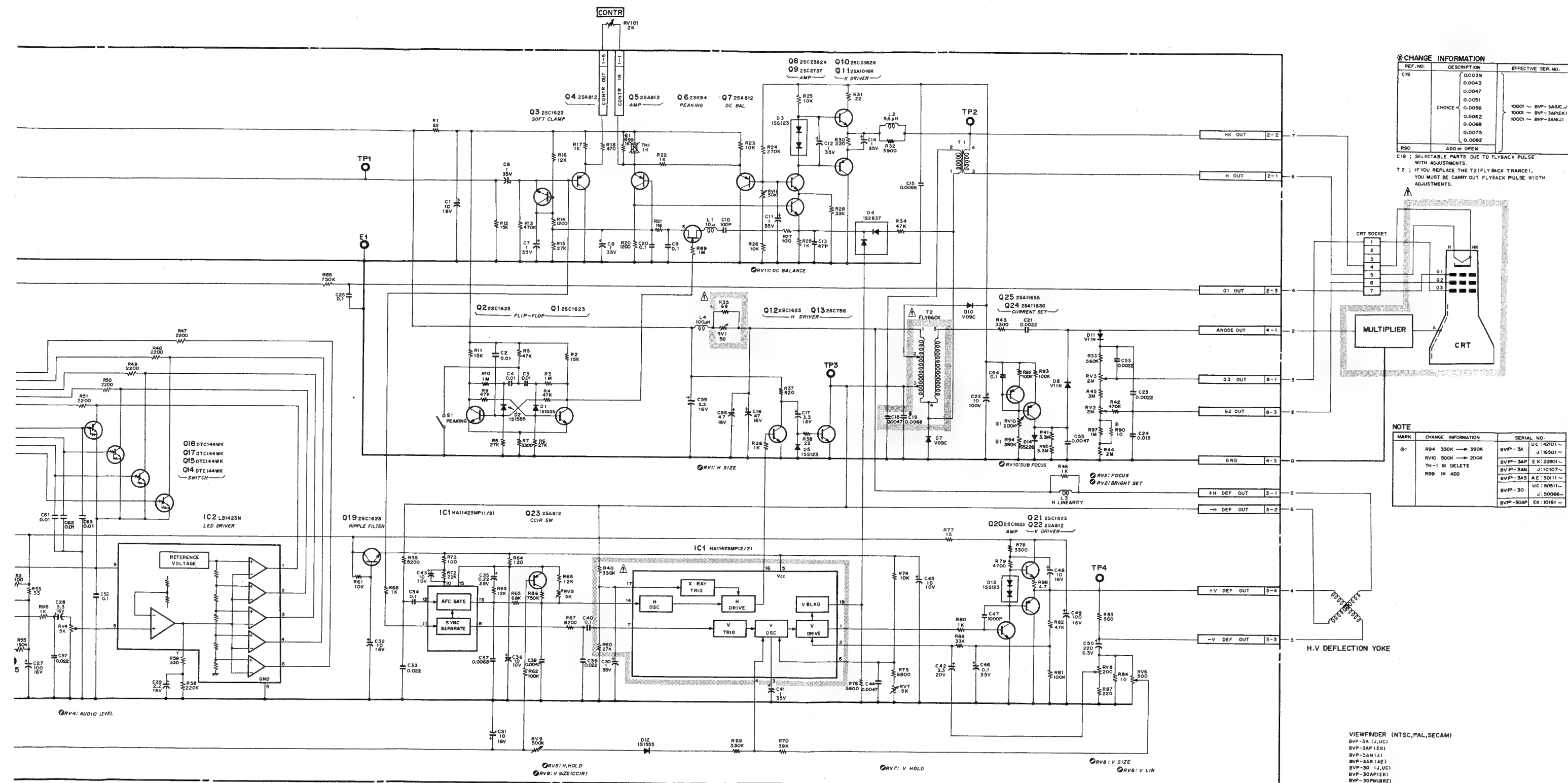
VF-22 BOARD
-SOLDERING SIDE-



CN1	B -1	RV1	A -2
CN2	C -1	RV2	C -3
CN3	C -3	RV3	C -3
CN4	C -3	RV4	A -2
CN5	A -1	RV5	B -2
CN6	A -3	RV6	C -2
CN7	B -1	RV7	C -2
CN8	C -3	RV8	C -2
		RV9	B -1
D1	A -2	RV10	C -3
D2	A -1	RV11	C -1
D3	C -1		
D4	B -1	S1	A -1
D5	A -2		
D7	B -3	TP1	B -1
D8	B -3	TP2	C -1
D10	B -3	TP3	B -3
D11	B -3	TP4	C -2
D12	B -2	TP5	A -1
D13	C -2		
D14	B -3		
E1	A -1		
IC1	B -2		
IC2	A -3		
Q1	A -2		
Q2	A -2		
Q3	B -1		
Q4	B -1		
Q5	C -1		
Q6	B -1		
Q7	C -1		
Q8	C -1		
Q9	C -1		
Q10	C -1		
Q11	C -1		
Q12	B -2		
Q13	A -3		
Q14	A -2		
Q15	A -2		
Q17	A -2		
Q18	A -2		
Q19	A -2		
Q20	C -2		
Q21	C -2		
Q22	C -2		
Q23	B -2		
Q24	C -3		
Q25	C -2		

VIEWFINDER
LP-28 BAORD
MC-19 BOARD
SW-80 BOARD
VF-22 VOARD





BVP-30(J) up to 50065
BVP-30(UC) up to 60510
BVP-30AP(EK) up to 10160
BVP-3A(J) up to 16415
BVP-3A(UC) up to 42020
BVP-3AN(J) up to 10106
BVP-3AP(EK) up to 22710
BVP-3AS(AE) up to 30110

BVP-30AP(EK)
BVP-30PMIBRZ
BVP-3A(JUC)
BVP-3AN(J)
BVP-3AP(EK)
BVP-3AS(AEP)

SOLDERING SIDE

Component	Pin 1	Pin 2	Pin 3	Pin 4
D4	54			
D3				
D2				
D1				
R1				
R2				
R3				
S1				

54 53 52 51

1-612-250-10
CA-30 30L LUC
CA-30F 30F ER
CA-30PM BR2
BVF-30 LUC
BVP-30AF ER
BVP-30PM BR2
FVF-30 LUC
BVF-30AF
FVF-30PM ER
BVP-30S-AER

A 3x6 grid of numbers 1 through 10. Below the grid is a dashed circle containing numbers 1 through 12. A small label 'CN 1' is positioned above the circle. The numbers are arranged as follows:

4	3	2	1	5	6
3	1	9	8	6	
4	2	10	7	5	

Below the grid, a dashed circle contains the following numbers:

1	9	8
2	10	9
3	11	12
4	5	6

A small label 'CN 1' is positioned above the circle.

CN - 65 BOARD - 13
BVP - 30 (LUCI)
BVP - 30APEX
BVP - 30PM.BRZ
BVP - 3A (LUCI)
BVP - 3ANUE
BVP - 3APIEX
BVP - 3ASIAEP

SW-77,79 BOARD - 11
BYP-3A (J,UC)
BYP-3AP EK
BYP-30PM:BRZI
B.P-3A (J,UC)
BYP-3AN:J
BYP-3AP EK
BYP-3AS:AEF

PARTS No. 1-612-379-13

5-66(a)

0-62-978-5
 B.P. SCOTLAND
 P.O. N. A.P. EX
 P.O. SODOM BRZ
 B.P. SA...
 B.P. SAG...
 B.P. SAG (H)
 B.P. SAS AT

HN-30 (1/2)
— SOLDERING SIDE —

PARTS NO.1-612-354-12

[illegible]

HN 30 BOARD
1-612 554 12
BVP-3A(U,UC)
BVP-3AN(U)
BVP-3AP(EK)
BVP-3AS(AE)

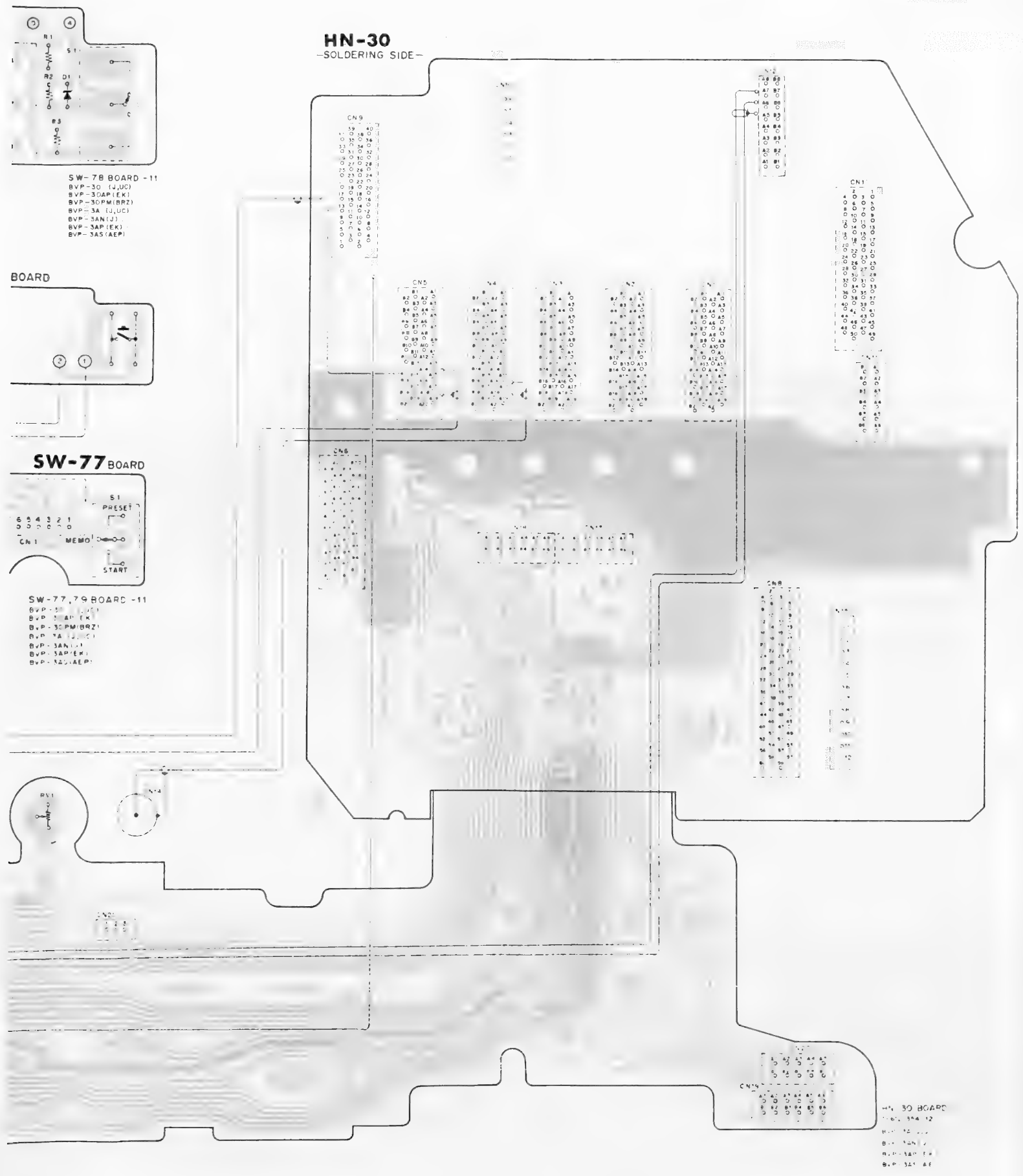
HN-30 (1/2
— SOLDER

HN-30 (1/2)
— SOLDERING SIDE —

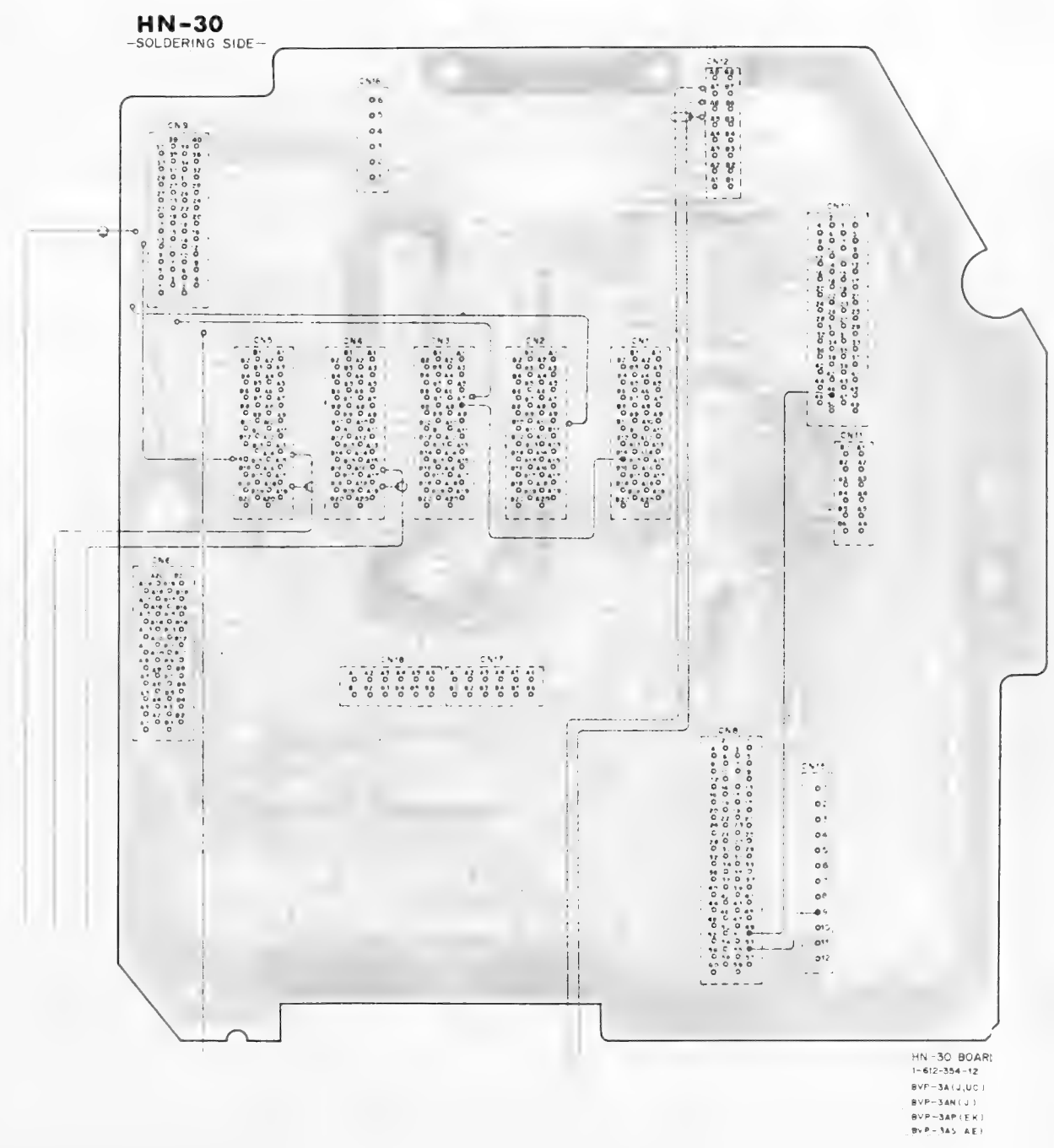
PARTS NO.1-612-354-12

HN-30 (1/2)
— SOLDERING SIDE —

PARTS No. 1-612-354-12



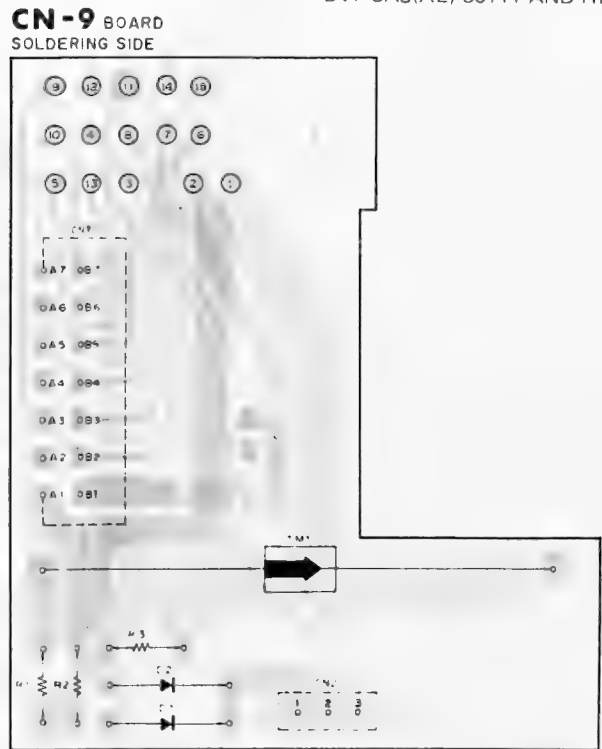
5-67(a)



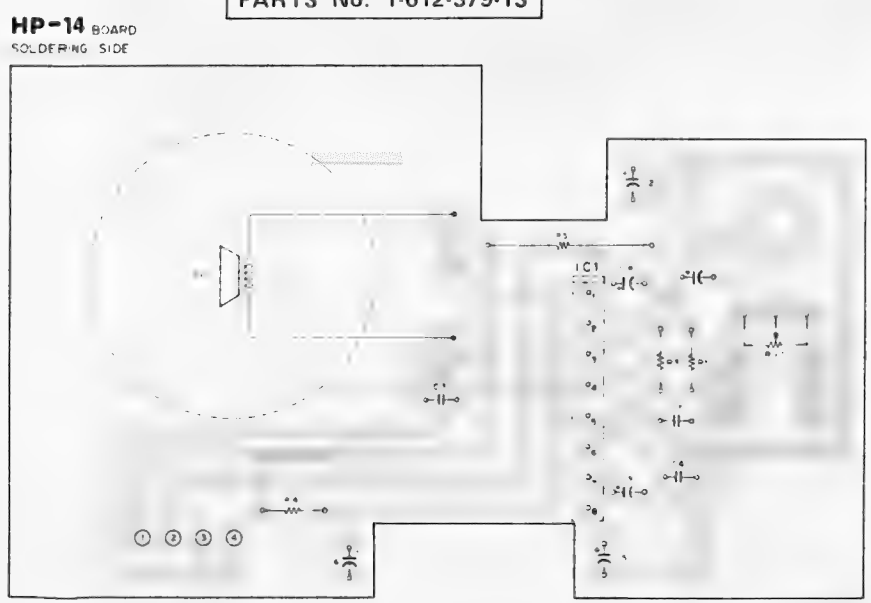
5-68(a)

CN-8, 9, 65 BOARD
HN-30 BOARD
HP-14 BOARD
SW-77, 79, 207 BOARD

BVP-30(J) 50066 AND HIGHER
BVP-30(UC) 60511 AND HIGHER
BVP-30AP(EK) 10161 AND HIGHER
BVP-3A(J) 16416 AND HIGHER
BVP-3A(UC) 42021 AND HIGHER
BVP-3AN(J) 10107 AND HIGHER
BVP-3AP(EK) 22711 AND HIGHER
BVP-3AS(AE) 30111 AND HIGHER

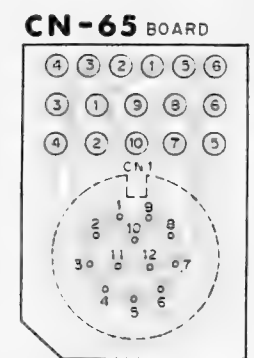
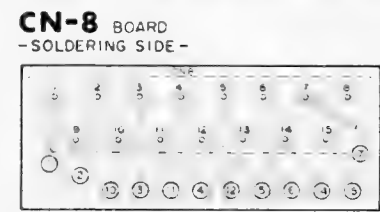
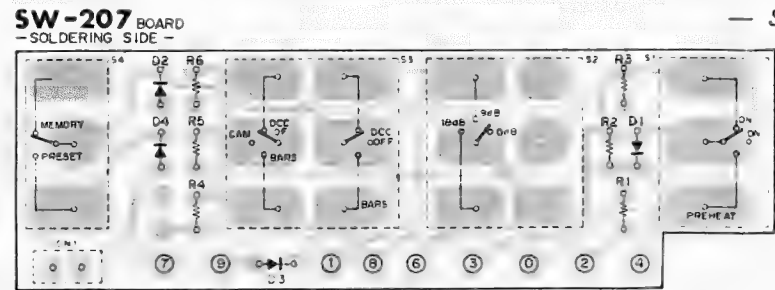


BVP-30(J) 50066 AND HIGHER
BVP-30(UC) 60511 AND HIGHER
BVP-30AP(EK) 10161 AND HIGHER
BVP-3A(J) 16416 AND HIGHER
BVP-3A(UC) 42021 AND HIGHER
BVP-3AN(J) 10107 AND HIGHER
BVP-3AP(EK) 22711 AND HIGHER
BVP-3AS(AE) 30111 AND HIGHER

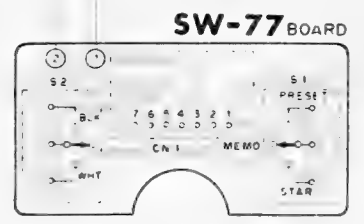
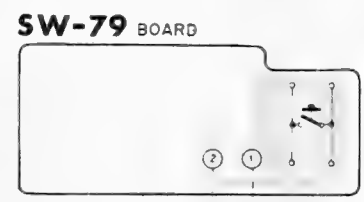


PARTS No. 1-612-379-13

5-66(b)



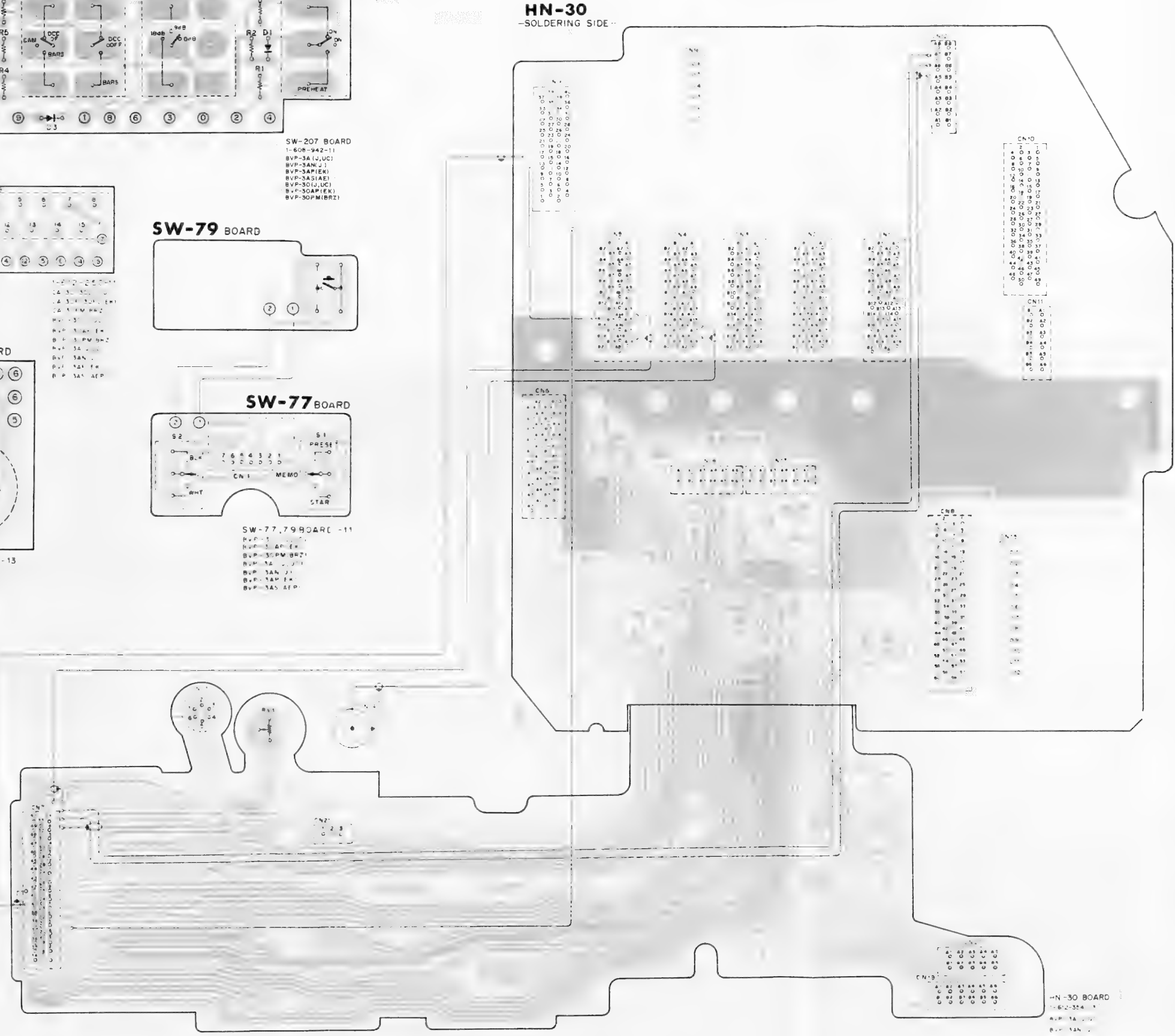
CN-65 BOARD -13
BVP-30(J) 50066 AND HIGHER
BVP-30(UC) 60511 AND HIGHER
BVP-30AP(EK) 10161 AND HIGHER
BVP-3A(J) 16416 AND HIGHER
BVP-3A(UC) 42021 AND HIGHER
BVP-3AN(J) 10107 AND HIGHER
BVP-3AP(EK) 22711 AND HIGHER
BVP-3AS(AE) 30111 AND HIGHER



SW-77,79 BOARD -11
BVP-30(J) 50066 AND HIGHER
BVP-30(UC) 60511 AND HIGHER
BVP-30AP(EK) 10161 AND HIGHER
BVP-3A(J) 16416 AND HIGHER
BVP-3A(UC) 42021 AND HIGHER
BVP-3AN(J) 10107 AND HIGHER
BVP-3AP(EK) 22711 AND HIGHER
BVP-3AS(AE) 30111 AND HIGHER

HN-30 (1/2)
SOLDERING SIDE

PARTS NO.1-612-354-13



HN-30 BOARD
1-612-354-13
BVP-30(J) 50066 AND HIGHER
BVP-30(UC) 60511 AND HIGHER
BVP-30AP(EK) 10161 AND HIGHER
BVP-3A(J) 16416 AND HIGHER
BVP-3A(UC) 42021 AND HIGHER
BVP-3AN(J) 10107 AND HIGHER
BVP-3AP(EK) 22711 AND HIGHER
BVP-3AS(AE) 30111 AND HIGHER

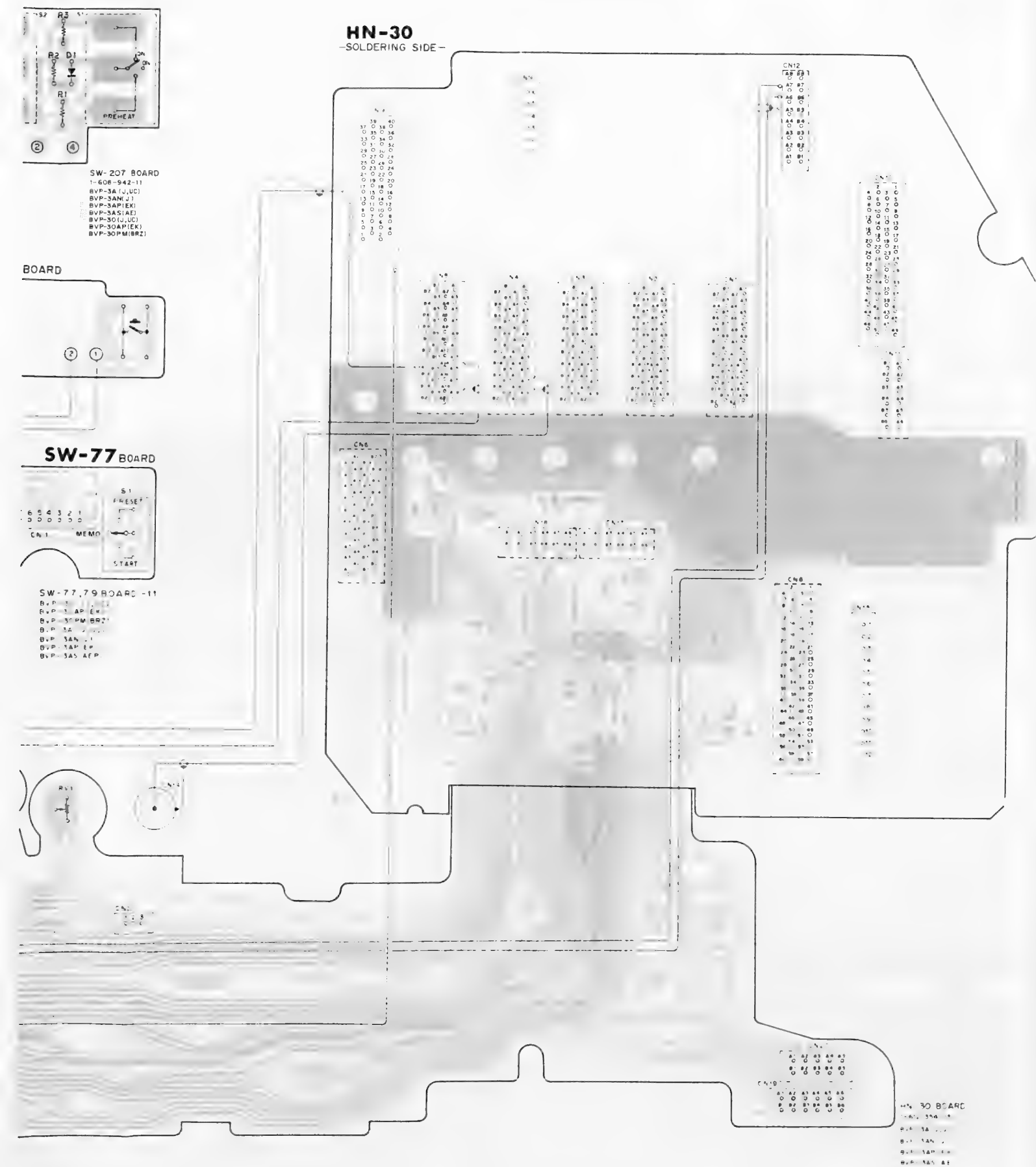
5-67(b)

HN-30 (1/2)
— SOLDERING SIDE —

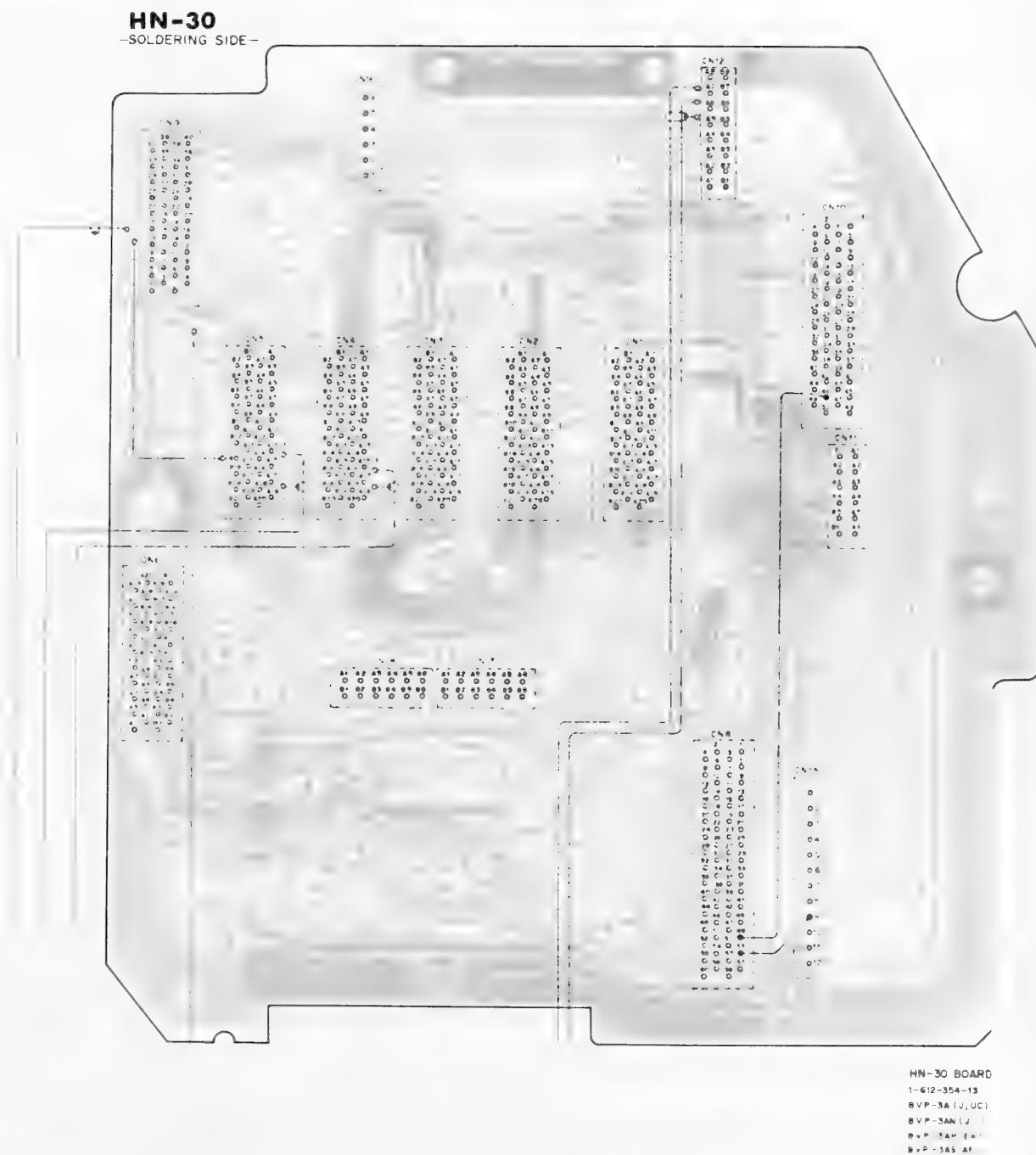
PARTS NO.1-612-354-13

HN-30 (1/2)
— SOLDERING SIDE —

PARTS NO.1-612-354-13

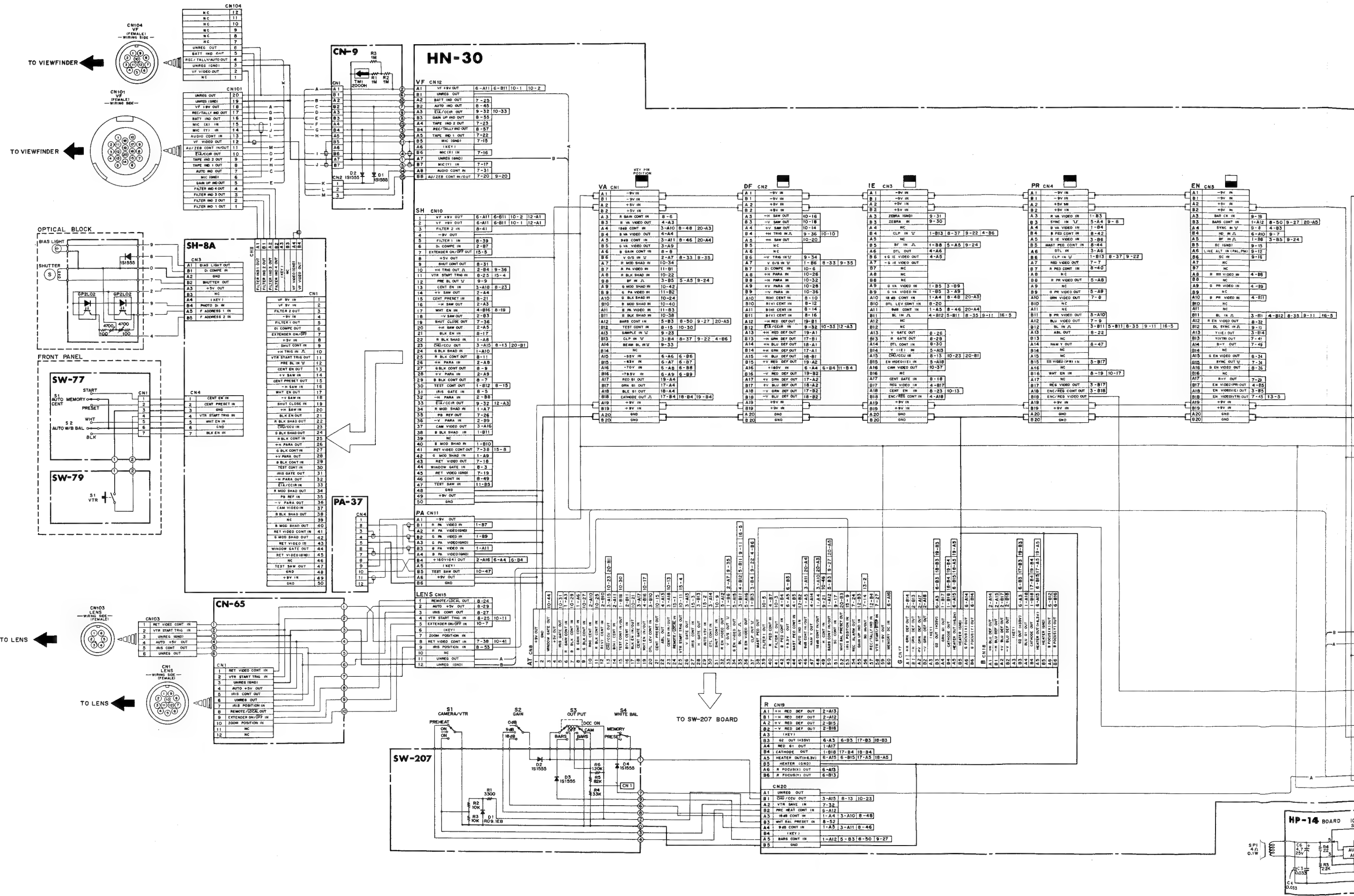


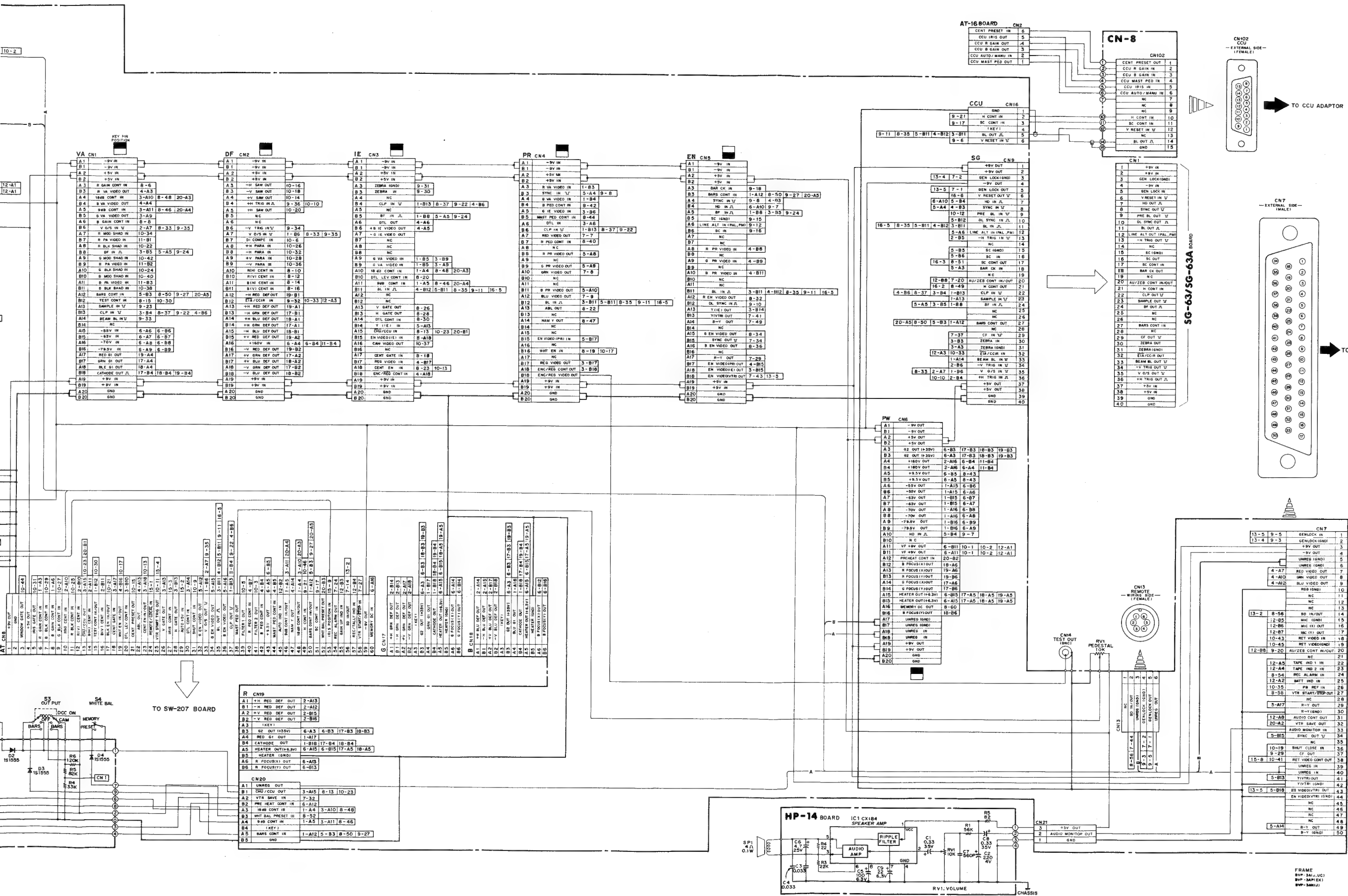
5-67(b)



5-68(b)

FRAME

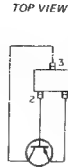




SECTION 6 SEMICONDUCTOR ELECTRODES



2SA1005
2SA1016K
2SA1091
2SA844



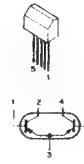
TOP VIEW

2SA1163
2SA1226
2SA812
2SB815

TYPE NO
PRINTED



2SA1175



2SA979



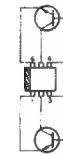
2SB733

TOP VIEW



2SC1009A
2SC1623
2SC2767
2SD1048

TOP VIEW



2SC1963



2SC2362K
2SC2551
2SC3112
2SC641K



2SC2669

TYPE NO
PRINTED



2SC2785
2SC2787

BOTTOM VIEW



2SC756



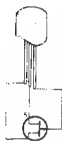
2SD1061



2SD773



2SK125



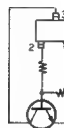
2SK152
2SK43

TOP VIEW

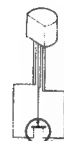


2SK94

TOP VIEW

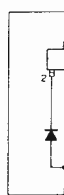


DTC144WK



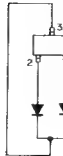
J175
J176
J271
2SK121

TOP VIEW



1S2835

TOP VIEW



1S2837

TOP VIEW



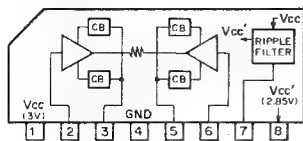
1SS123
1SS226

TOP VIEW



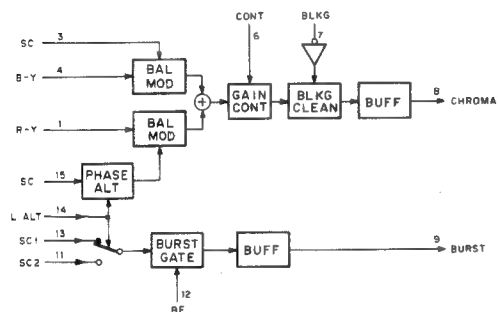
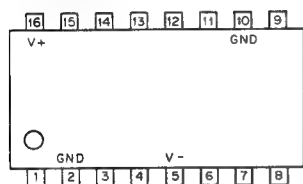
RD 2 2M

CX184 (SONY)
AUDIO POWER AMP/RIPPLE FILTER
— SIDE VIEW —

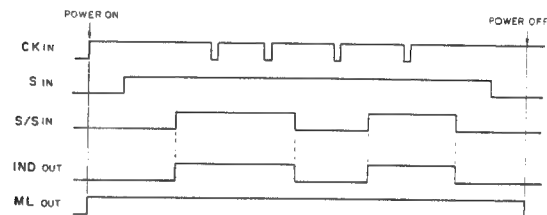
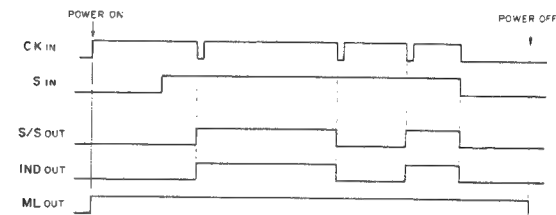
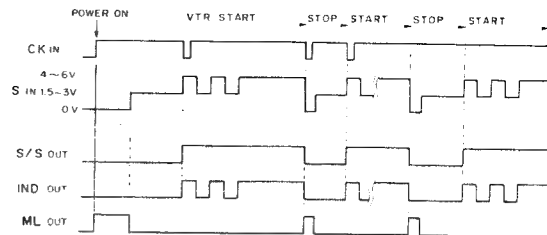
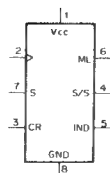
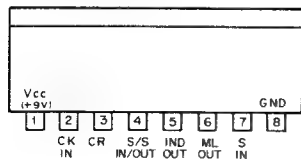


CB; CURRENT BUFFER

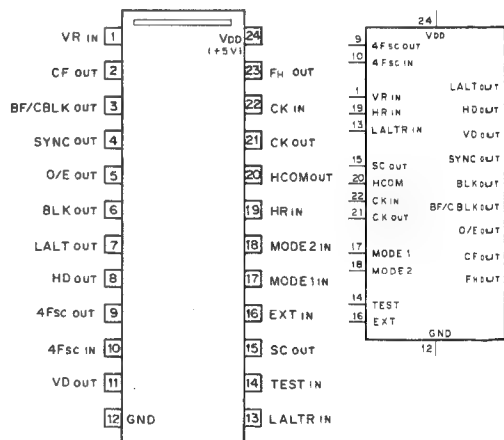
CX22017 (SONY)
VIDEO SIGNAL PROCESSOR
— TOP VIEW —



CX518 (SONY)
M54890L (MITSUBISHI)
INTERFACE CIRCUIT BETWEEN VTR AND CAMERA
— SIDE VIEW —



CX773A (SONY)
C-MOS SYNC GENERATOR (NTSC, PAL-M, PAL, SECAM)
— TOP VIEW —



O/E : ODD/EVEN FIELD
CF : COLOR FRAME PULSE
HCOM : H COMPARATOR

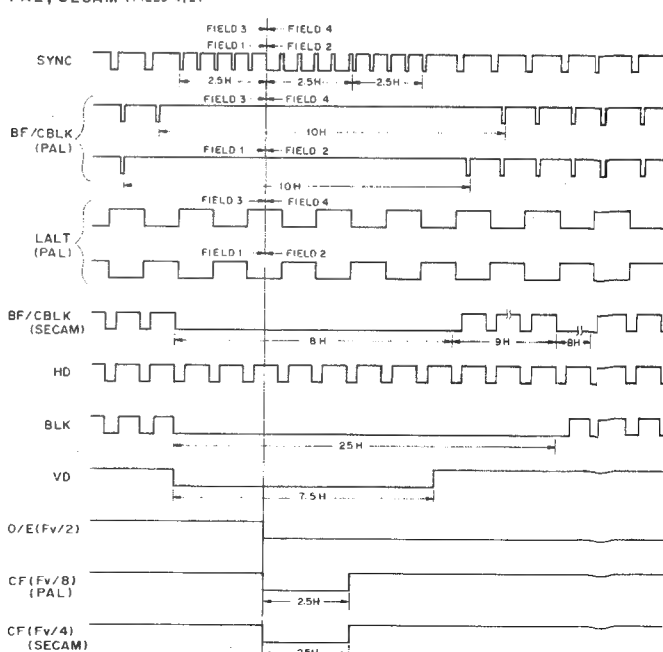
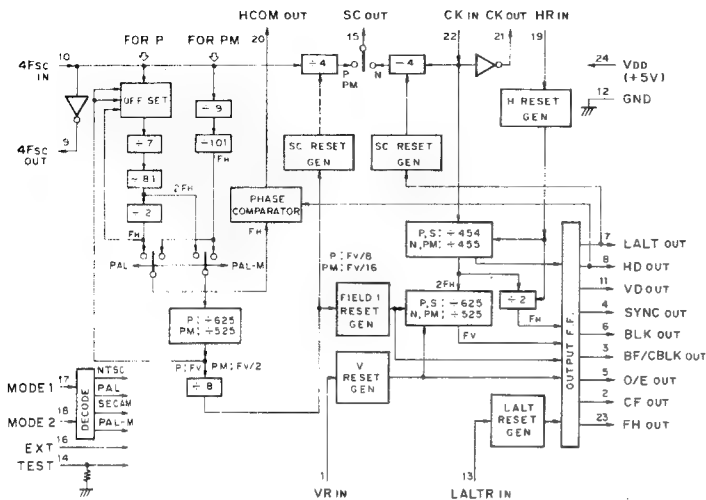
SYSTEM	4Fsc	CLOCK
NTSC	910 Fh	910 Fh
PAL	1135 Fh + 2 Fv	908 Fh
PALM	909 Fh	910 Fh
SECAM	—	908 Fh

INPUTS	MODE1	MODE2	SYSTEM
0	0	0	NTSC
0	1	0	SECAM
1	0	0	PALM
1	1	1	PAL

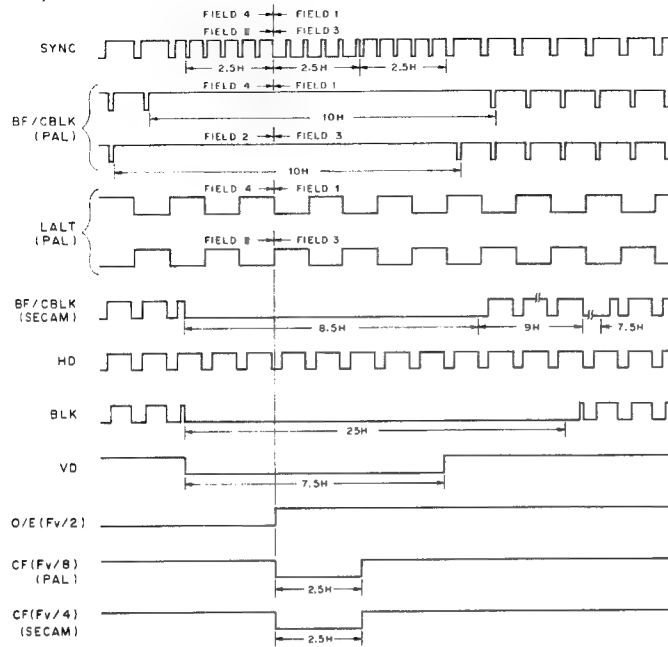
INPUTS	EXT	TEST	FUNCTION
0	0	0	INTERNAL
0	1	0	INVALID
1	0	0	EXT
1	1	1	TEST

0 : LOW LEVEL (GND)
1 : HIGH LEVEL (VDD)

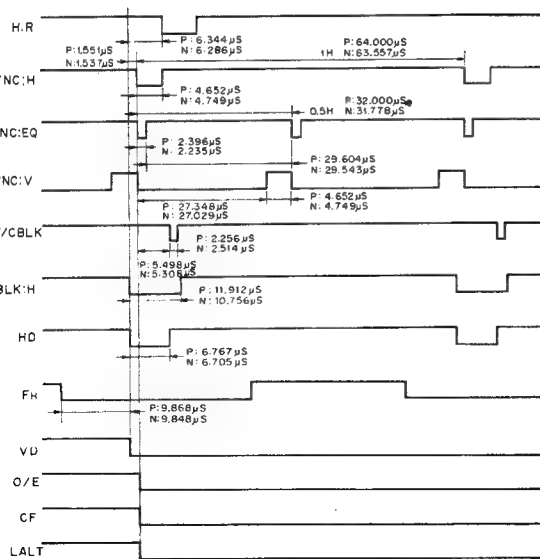
TEST "0" OPEN
(INTERNALLY
PULLED DOWN)



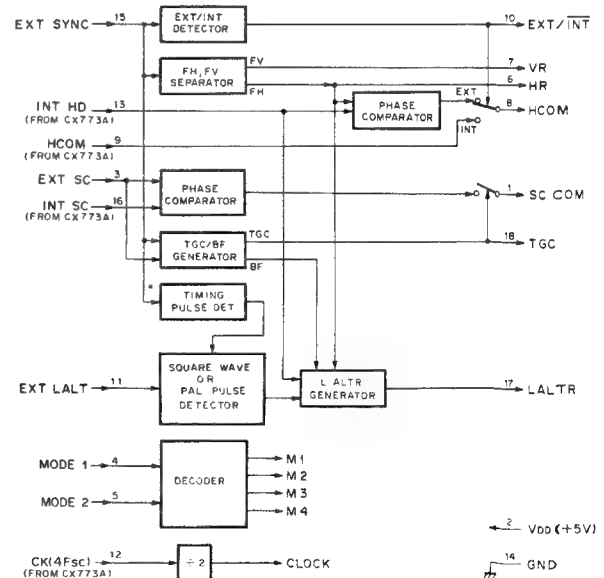
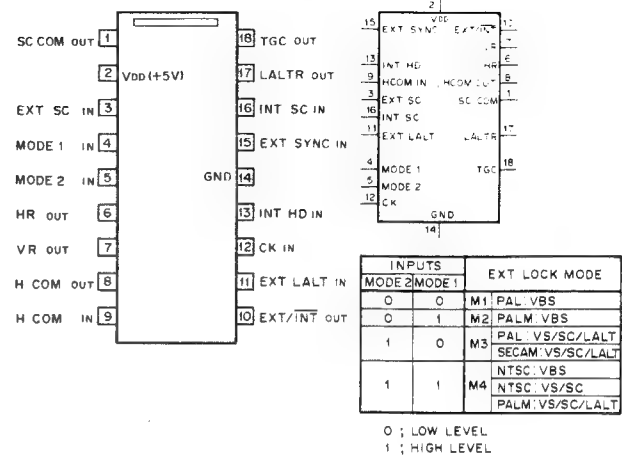
PAL, SECAM (FIELD 1,3)



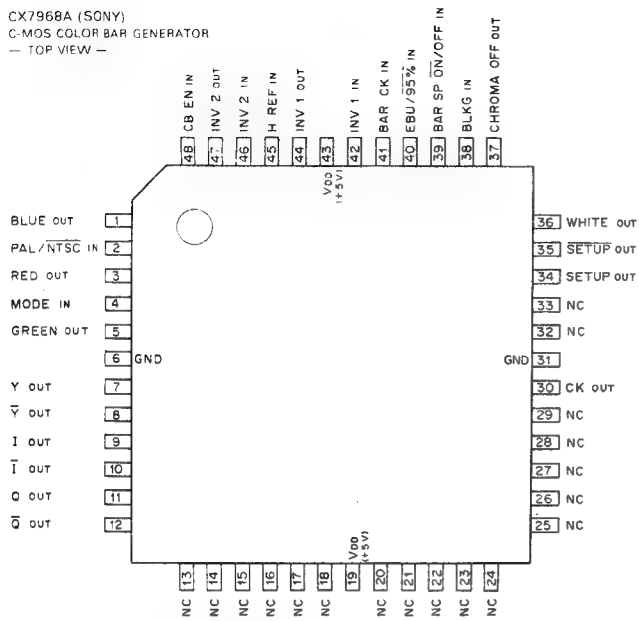
P: PAL, SECAM
N: NTSC, PALM



CX7903 (SONY)
C-MOS GENLOCK DRIVER FOR CX773A
— TOP VIEW —



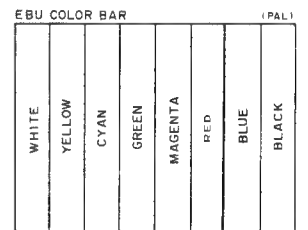
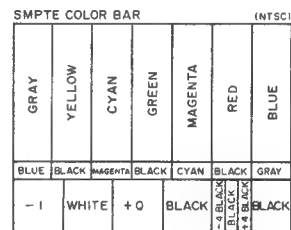
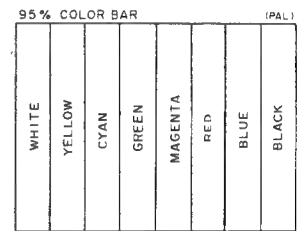
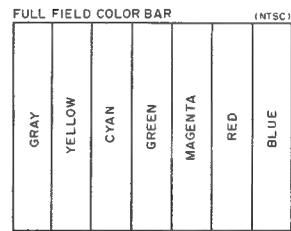
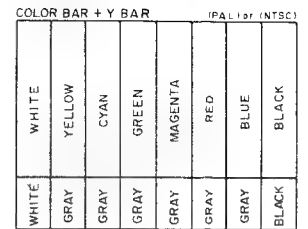
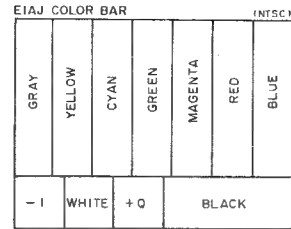
CX7968A (SONY)
C-MOS COLOR BAR GENERATOR
— TOP VIEW —



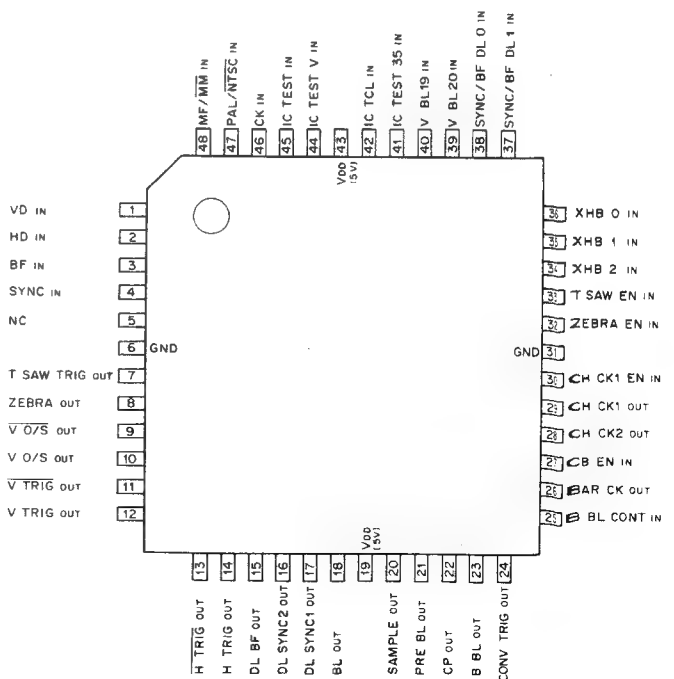
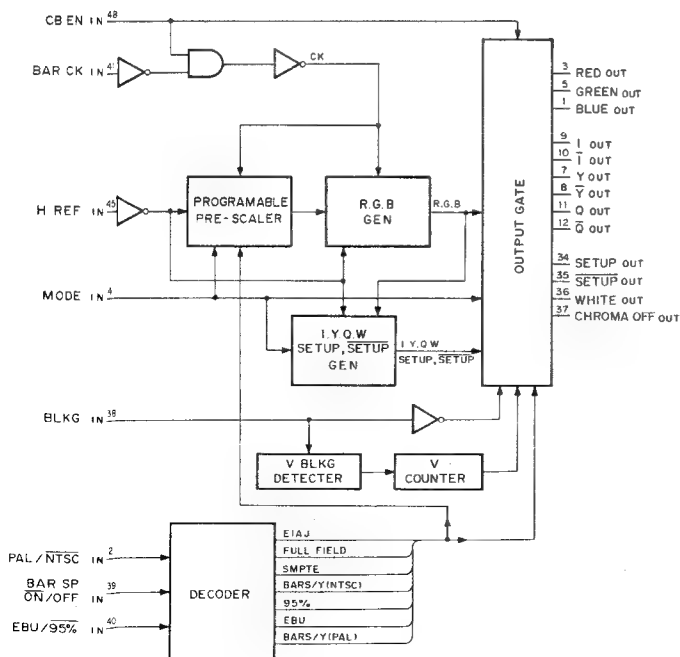
INPUT					FUNCTION
PAL/NTSC	MODE	EBU/95%	BAR SP		
0	0	0	0		EIAJ COLOR BAR
0	0	0	1		FULL FIELD COLOR BAR
0	0	1	0		INHIBIT
0	0	1	1		INHIBIT
0	1	0	0		EIAJ COLOR BAR
0	1	0	1		FULL FIELD COLOR BAR
0	1	1	0		SMPTE COLOR BAR
0	1	1	1		COLOR BAR + Y BAR
1	0	0	0		95% COLOR BAR
1	0	0	1		INHIBIT
1	0	1	0		EBU COLOR BAR
1	0	1	1		INHIBIT
1	1	0	0		95% COLOR BAR
1	1	0	1		COLOR BAR + Y BAR
1	1	1	0		EBU COLOR BAR
1	1	1	1		INHIBIT

0: LOW LEVEL
1: HIGH LEVEL

○ COLOR BAR PATTERN



CX7969 (SONY)
C-MOS PULSE GENERATOR
— TOP VIEW —



1. SYSTEM DESIGNATION

INPUT	SYSTEM
PAL/NTSC IN	
1	PAL, SECAM
0	NTSC, PALM

2. TYPE OF TUBE

INPUT	FUNCTION
MF/MM IN	
1	MAG-STA TUBE
0	MAG-MAGTUBE

3. V BLKG WIDTH (NTSC ONLY)

INPUT	V BLKG WIDTH
V BL 19 V BL 20	
1 X	19H
0 0	20H
0 1	21H

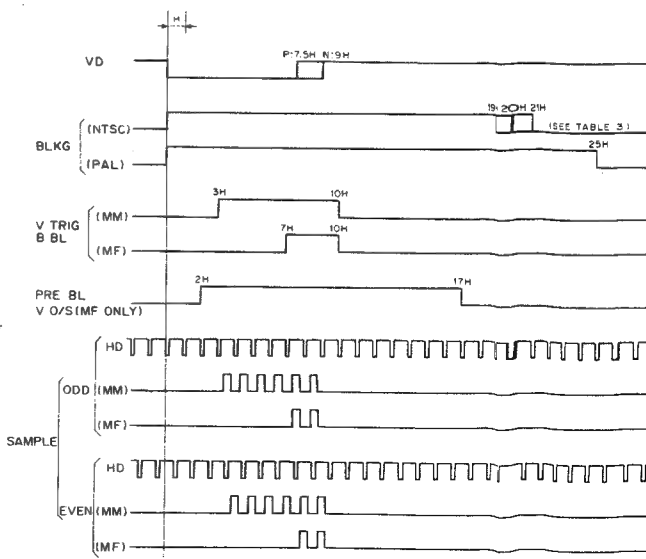
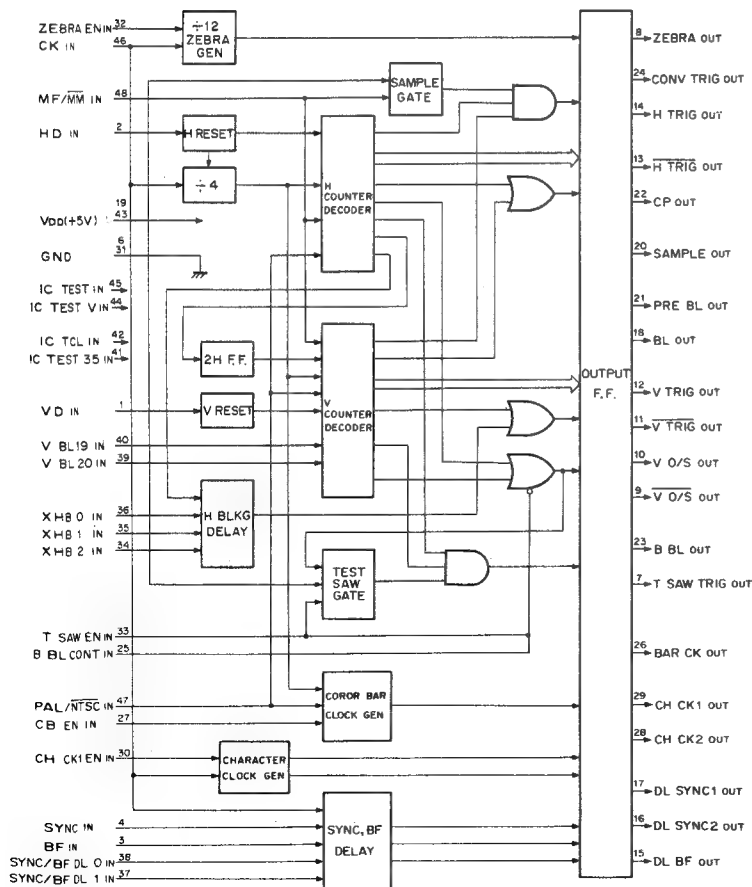
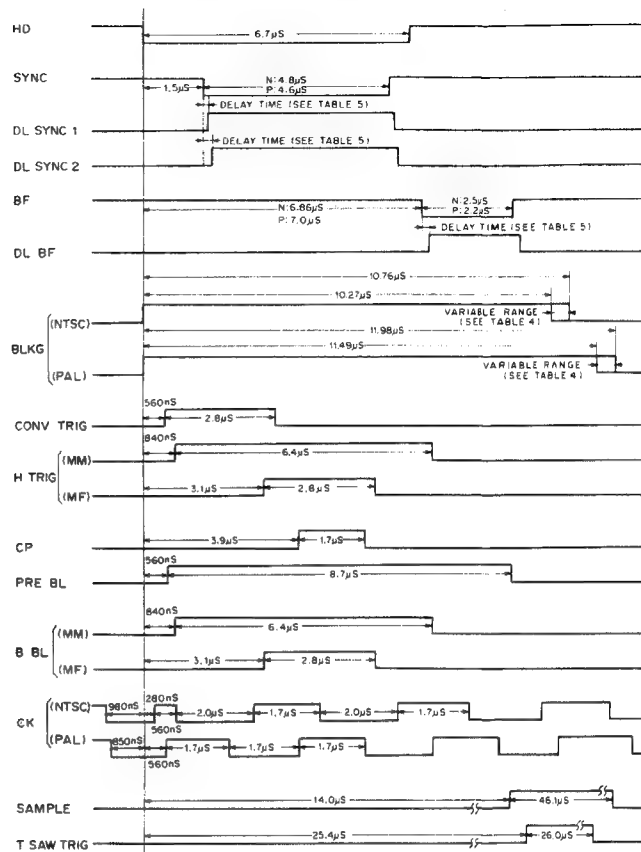
4. H BLKG WIDTH

INPUT	BLKG WIDTH (μS)
XHB2 XHB1 XHB0	NTSC PAL
1 1 1	10.27 11.49
1 1 0	10.34 11.56
1 0 1	10.41 11.63
1 0 0	10.48 11.70
0 1 1	10.55 11.77
0 1 0	10.62 11.84
0 0 1	10.69 11.91
0 0 0	10.76 11.98

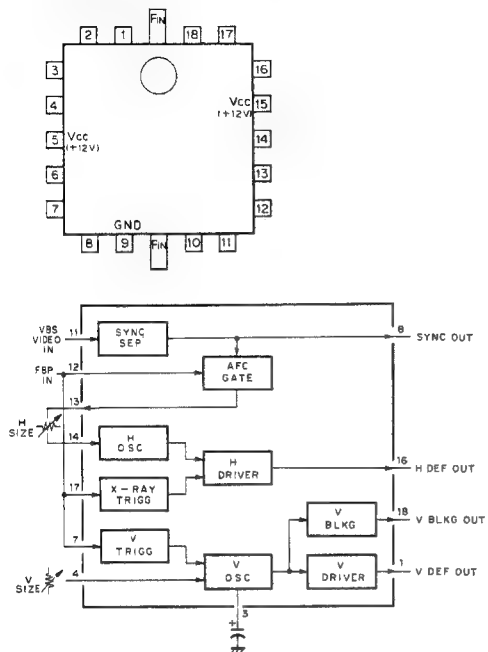
5. DELAY TIME

INPUT	DELAY TIME (ns)
SYNC/BF DL SYNC/BF DL2	DL SYNC 1 DL SYNC 2 DL BF
1 1	140 210 140
1 0	210 280 210
0 1	530 700 630
0 0	700 770 700

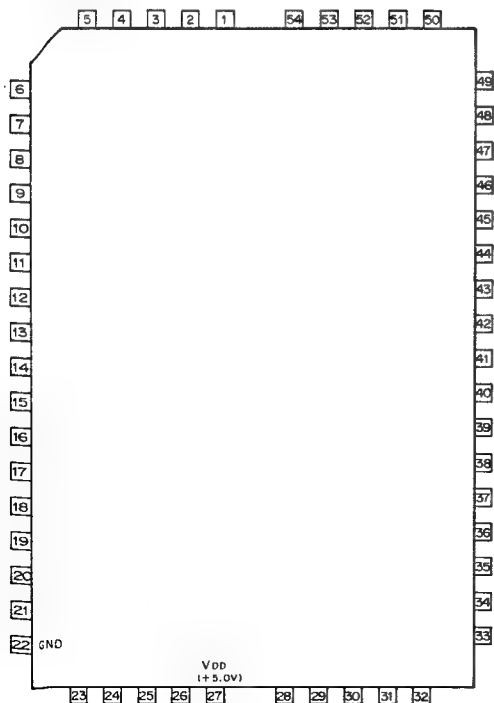
1; HIGH LEVEL
0; LOW LEVEL
X; DON'T CARE



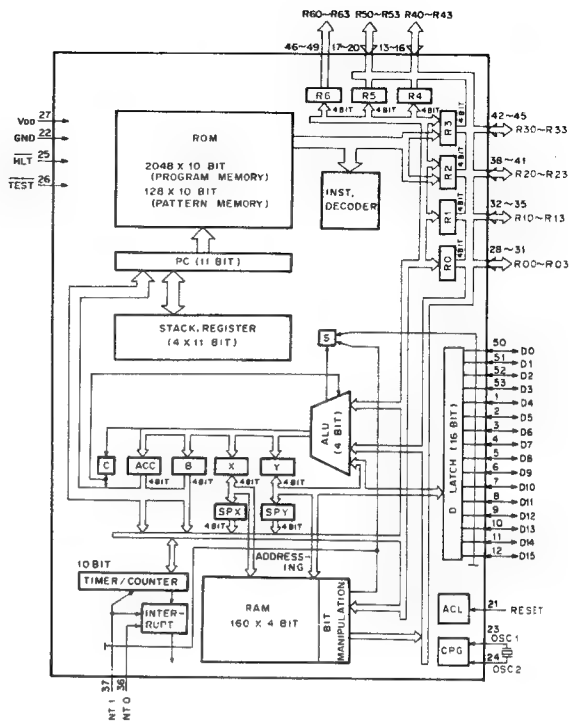
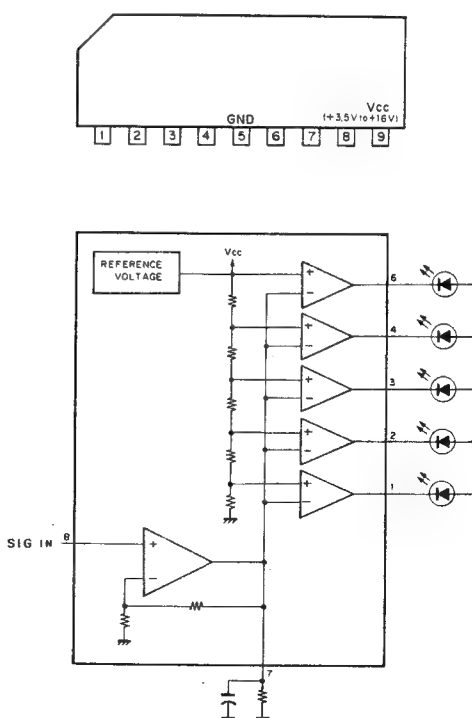
HA11423MP (HITACHI) FLAT PACKAGE
TV H/V SYNC SIGNAL PROCESSOR
— TOP VIEW —



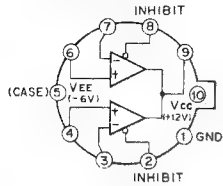
HD44820B27 (HITACHI) FLAT PACKAGE
C-MOS 4-BIT MICROPROCESSOR
— TOP VIEW —



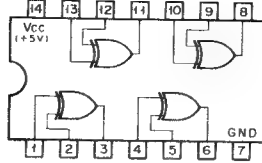
LB1423N (SANYO)
LED DRIVER FOR AC/DC LEVEL METER
— SIDE VIEW —



LM711CH (NS)
DUAL DIFFERENTIAL VOLTAGE COMPARATOR
— BOTTOM VIEW —



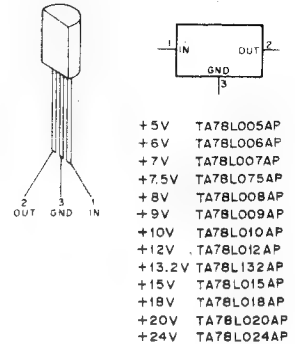
SN74LS86N (TI)
TTL EXCLUSIVE OR GATE
— TOP VIEW —



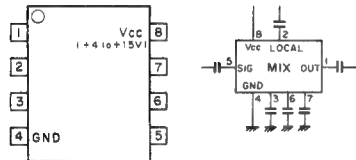
$$Y = A \oplus B = A \cdot \bar{B} + \bar{A} \cdot B$$

A	B	Y
0	0	0
0	1	1
1	0	1
1	1	0

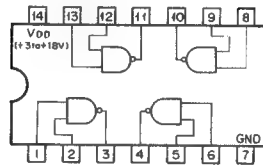
TA78L277AP (TOSHIBA)
VOLTAGE REGULATOR



SN16913P (TI)
BALANCED MIXER
— TOP VIEW —



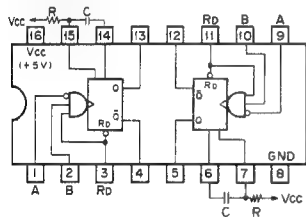
TC4011BP (HITACHI)
C-MOS 2-INPUT NAND GATE
— TOP VIEW —









$$Y = \overline{A \cdot B} = \bar{A} + \bar{B}$$

A	B	Y
0	0	1
0	1	1
1	0	1
1	1	0

SN74LS123N (TI)
TTL RETRIGGERABLE MONOSTABLE MULTIVIBRATOR WITH DIRECT RESET
— TOP VIEW —



INPUTS			OUTPUTS	
R _D	A	B	Q	Q̄
0	X	X	0	1
X	1	X	0	1
X	X	0	0	1
1	0	1		
1	1	1		
1	0	1		

0; LOW LEVEL
 1; HIGH LEVEL
 X; DONT CARE

OUTPUT PULSE WIDTH

$$T_w = 0.28 \left(1 + \frac{700}{R} \right) CR$$

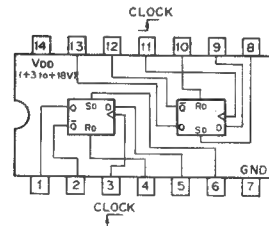
$$T_w = 0.33 \left(1 + \frac{700}{R} \right) CR$$

$$T_w = 0.25 \left(1 + \frac{700}{R} \right) CR$$

$$T_w = 0.29 \left(1 + \frac{700}{R} \right) CR$$

$$T_w = 0.45CR$$

TC4013BF (TOSHIBA) FLAT PACKAGE
C-MOS D-TYPE FLIP FLOP WITH DIRECT SET/RESET
— TOP VIEW —

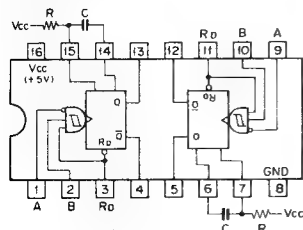








DIRECT R-S FLIP FLOP				D-TYPE FLIP FLOP	
Sd	Rd	Q	Q̄	CKn	CKnt+
0	0	0	1	0	0
0	1	0	1	0	0
1	0	1	0	0	0
1	1	0	1	1	1

CLOCK CK; 5[—]
 CKn: BEFORE CLOCK
 CKnt+: AFTER CLOCK

0: LOW LEVEL
 1: HIGH LEVEL

SN74LS221N (TI)
TTL MONOSTABLE MULTIVIBRATOR WITH SCHMITT TRIGGER INPUT
— TOP VIEW —



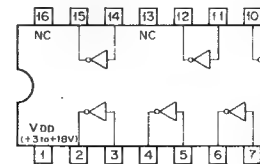
INPUTS			OUTPUTS	
R _D	A	B	Q	Q̄
0	X	X	0	1
X	1	X	0	1
X	X	0	0	1
1	0	↑		
1	↓	1		
↑	0	1		

0: LOW LEVEL
 1: HIGH LEVEL
 X: DON'T CARE

OUTPUT PULSE WIDTH = 0.7CR

OUTPUT PULSE WIDTH = 0.7CR

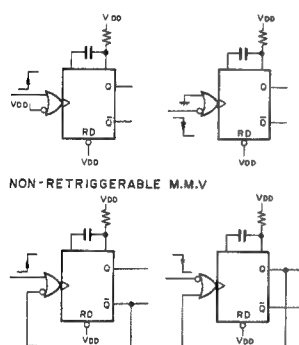
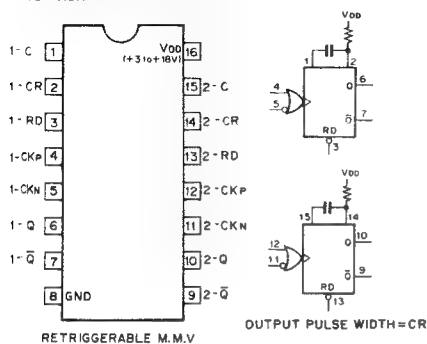
TC4049BF (TOSHIBA) FLAT PACKAGE
C-MOS INVERTING TYPE BUFFER/CONVERTER
— TOP VIEW —



A	Y
0	1
1	0

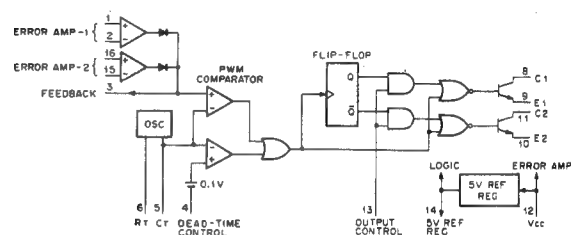
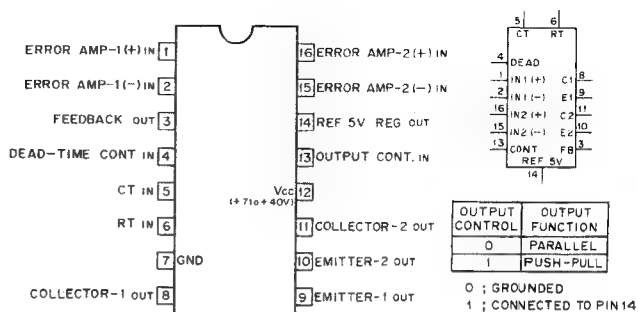
TC4538BF (TOSHIBA) FLAT PACKAGE
C-MOS DUAL RETRIGGERABLE/NON-RETRIGGERABLE
MONOSTABLE MULTIVIBRATOR

— TOP VIEW —

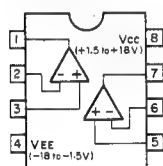


TL494CN (TI)
PWM POWER CONTROL

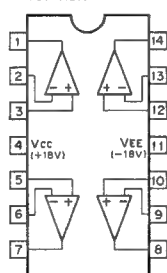
— TOP VIEW —



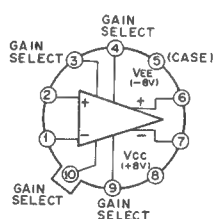
TLO82CP (TI)
TLO62CPS (TI) FLAT PACKAGE
OPERATIONAL AMPLIFIER
(J FET-INPUT)
— TOP VIEW —



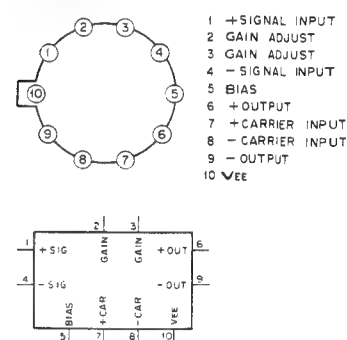
TLO64CN (TI)
TLO64CNS (TI) FLAT PACKAGE
OPERATIONAL AMPLIFIER
(J FET-INPUT)
— TOP VIEW —



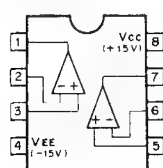
uA733HC (FSC)
DIFFERENTIAL VIDEO AMPLIFIER
— BOTTOM VIEW —



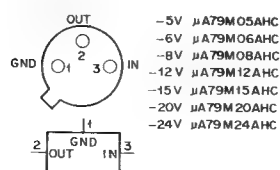
uA796HCA (FSC)
DOUBLE-BALANCED MOD/DEM.O.
— BOTTOM VIEW —



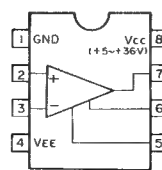
TLO82CP (TI)
OPERATIONAL AMPLIFIER
(J FET-INPUT)
— TOP VIEW —



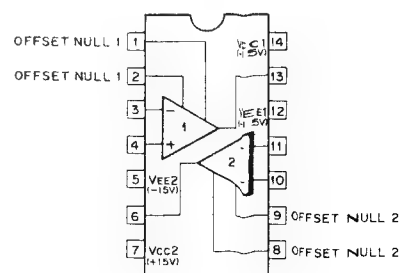
uA79M??AHC (FSC)
NEGATIVE VOLTAGE REGULATOR (0.5A)
— BOTTOM VIEW —



uPC311G2 (NEC) FLAT PACKAGE
VOLTAGE COMPARATOR
— TOP VIEW —



uPC454D (NEC)
OPERATIONAL AMPLIFIER
— TOP VIEW —




SECTION 7 SPARE PARTS

7-1. PARTS INFORMATION

PARTS INFORMATION

1. Safety Related Component Warning

Components identified by shading and -mark on the schematic diagrams, exploded views and electrical spare parts list are critical to safe operation. Replace these components with Sony parts whose part numbers appear as shown in this manual or in service bulletins and service manual supplements published by Sony.

2. Replace Parts that are supplied from Sony Parts Center can sometimes have different shape and external appearance than what are actually used in equipment. This is due to "accomodating the improved parts and/or engineering changes" or "standardization of genuine parts".

- This manual's exploded views and electrical spare parts list are indicating the parts numbers of "the standardized genuine parts at present".
- Regarding engineering parts changes in our engineering department, refer Sony service bulletins and service manual supplements.

3. **Printed Components in Bold-Face type** on the exploded views and electrical spare parts list are normally stocked for replacement purposes. The remaining parts are not normally required for routine service work. Orders for parts not shown in Bold-Face type will be processed, but allow for additional delivery time.

4. Item with no part number and/or no description are not stocked because they are seldom required for routine service.



5. Abbreviation

REF. NO.	DESCRIPTION	REF. NO.	DESCRIPTION	REF. NO.	DESCRIPTION
C	CAPACITOR	IC	IC	RV	VARIABLE RESISTOR
CN	CONNECTOR	L	INDUCTOR	S	SWITCH
CV	VARIABLE CAPACITOR	LV	VARIABLE INDUCTOR	T	TRANSFORMER
D	DIODE	Q	TRANSISTOR	TH	THERMISTOR
DL	DELAY LINE	R	RESISTOR	THP	THERMISTOR (POSITIVE)
FL	FILTER	RP	RESISTOR BLOCK	X	OSCILLATOR

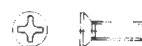

All capacitors are in micro farads unless otherwise specified.
All inductors are in micro henries unless otherwise specified.
All resistors are in ohms.


6. Screw

TOTSU TYPE

	B 	BTP 
2.6x3	7-621-912-08	
2.6x5	7-621-912-28	
(BZn)	7-621-912-20	
2.6x6	7-621-912-30	
2.6x10	7-621-912-50	
3x4	7-686-622-09	
3x6	7-686-624-09	
3x8		7-687-614-14
3x16	7-686-629-09	
4x6	7-686-634-04	
(BZn)		7-686-634-09
4x16	7-686-639-09	

+ TYPE

	+K 	+P 
2x2.5		7-627-553-27
2x4	7-627-452-28	7-627-553-47
(BZn)		7-627-553-48
2.6x4		7-627-556-38
2.6x12	7-621-592-30	
3x6	7-682-247-09	

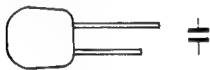
	BOLT, HEXAGON 
2.6x10	7-683-414-05
3x8	7-683-404-04

7-2. ELECTRICAL PARTS

Parts that are not listed in the "reference numbers order list" are shown in following table.
Reference numbers are omitted.

CAPACITOR

SILVERED MICA CAPACITOR



1 pF through 8.2 pF ± 0.5 pF 500V
10 pF through 680 pF $\pm 5\%$ 500V
750 pF $\pm 10\%$ 500V

Parts No. 1-107-□□□-00							
Value	Parts No. -□□□-	Value	Parts No. -□□□-	Value	Parts No. -□□□-	Value	Parts No. -□□□-
1 pF	019	12 pF	204	51 pF	164	220 pF	177
1.2	039	13	205	56	165	240	178
1.5	040	15	206	62	166	270	179
1.8	041	16	207	68	036	300	180
2.2	042	18	208	75	167	330	181
2.7	043	20	209	82	037	360	182
3.3	044	22	210	91	168	390	183
3.9	045	24	211	100	169	430	184
4.7	046	27	157	110	170	470	185
5.1	026	30	158	120	171	510	186
5.6	047	33	159	130	172	560	187
6.8	048	36	160	150	173	620	188
8.2	049	39	161	160	174	680	212
10	202	43	162	180	175	750	258
11	203	47	163	200	176		

TANTALUM CAPACITOR



0.01 μ F through 100 μ F \pm 10%
3.15V through 35V

NOTE: The value of the parts that are marked by * in the below table are indicated by color code, (to the value with \pm 20%)



Ex. BRN GRN BLU
1 5 6

15 x 10⁶ pF = 15 μ F

Working Voltage Color Code

BLK RED YEL GRN BLU GRY WHT
10V 35 6.3 16 20 25 3.15

Parts No. 1-131-□□□-00

Value		Parts No. -□□□-
0.01 μ	35V	*396
0.015	35	*397
0.022	35	*398
0.033	35	*399
0.047	35	*400
0.068	35	*401
0.1	35	*402
0.15	35	*403
0.22	35	*404
0.33	25	*409
	35	*405
0.47	20	*412
	35	*406
	16	*415
0.68	16	*415
	25	*410
	35	*407
1.0	10	*418
	20	*413

Value		Parts No. -□□□-
1.0 μ	35V	*408
1.5	6.3	*421
	16	*416
	25	*411
	35	348
2.2	3.15	*424
	10	*419
	20	*414
	25	355
	35	349
3.3	6.3	*422
	16	*417
	20	362
	25	356
4.7	35	350
	3.15	*425
	10	*420
	16	369

Value		Parts No. -□□□-
4.7 μ	20V	363
	25	357
	35	351
6.8	6.3	*423
	10	376
	16	370
	20	364
	25	358
	35	352
10	3.15	*426
	6.3	383
	10	377
	16	371
	20	365
	25	359
15	35	353
	3.15	390
	6.3	384

Value		Parts No. -□□□-
15 μ	10V	378
	16	372
	20	366
	25	360
22	3.15	391
	6.3	385
	10	379
	16	373
	20	367
33	3.15	392
	6.3	386
	10	380
	16	374
47	3.15	393
	6.3	387
	10	381
68	3.15	394
	6.3	388
100	3.15	395

C, CERAMIC CHIP

CERAMIC CAPACITOR



47PF through 0.15μF 50V

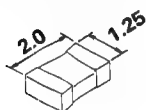
Parts No. 1-161-□□□-00

Value	Parts No. -□□□-
47P 5%	855
51P 5%	476
56P 5%	477
62P 5%	478
68P 5%	457
75P 5%	479
82P 5%	458
91P 5%	480
100P 5%	459
120P 5%	460
150P 5%	461

Value	Parts No. -□□□-
180P 5%	462
220P 5%	463
270P 5%	464
330P 5%	465
390P 5%	466
470P 5%	467
560P 5%	468
680P 5%	469
820P 5%	470
0.001μ 10%	471

Value	Parts No. -□□□-
0.0015μ 10%	852
0.0022μ 10%	853
0.0033μ 10%	854
0.0047μ 10%	472
0.01μ 10%	473
0.022μ 10%	474
0.033μ 10%	475
0.047μ 10%	481
0.068μ 10%	482
0.1μ 10%	483
0.15μ 10%	484

CHIP CERAMIC CAPACITOR



220pF through 0.018μF(B) ± 10% 50WV

0.022μF through 0.068μF(F) ⁺⁸⁰/₋₂₀ % 50WV

0.1μF(F) ⁺⁸⁰/₋₂₀ % 25WV

Parts No. 1-163-□□□-00

Value	Parts No. - □□□ -
100pF	—
120	—
150	—
180	—
220	001
270	002
330	003
390	004
470	005
560	006
680	007
820	008

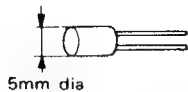
Value	Parts No. - □□□ -
0.001μF	009
0.0012	010
0.0015	011
0.0018	012
0.0022	013
0.0027	014
0.0033	015
0.0039	016
0.0047	017
0.0056	018
0.0068	019
0.0082	020

Value	Parts No. - □□□ -
0.01μF	021
0.012	022
0.015	023
0.018	024
0.022	033
0.027	—
0.033	034
0.039	—
0.047	035
0.056	—
0.068	036
0.082	—
0.1	038

INDUCTOR

MICRO INDUCTOR

1 μ H through 470 μ H
 $\pm 5\%$

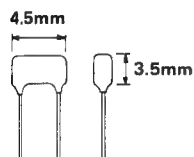


Parts No. 1-407-□□□-XX

Value	Parts No. -□□□-	Value	Parts No. -□□□-	Value	Parts No. -□□□-	Value	Parts No. -□□□-
1 μ H	178	4.7 μ H	186	22 μ H	161	100 μ H	169
1.2	179	5.6	187	27	162	120	170
1.5	180	6.8	188	33	163	150	171
1.8	181	8.2	189	39	164	180	172
2.2	182	10	157	47	165	220	173
2.7	183	12	158	56	166	270	174
3.3	184	15	159	68	167	330	175
3.9	185	18	160	82	168	390	176
						470	177

RESISTOR

METAL FILM RESISTOR



$\pm 1\%$, 1/8W
10 Ω through 33 k Ω

Parts No. 1-214-□□□-00

Value	Parts No. -□□□-	Value	Parts No. -□□□-	Value	Parts No. -□□□-	Value	Parts No. -□□□-
10 Ω	509	100 Ω	533	1.0k Ω	557	10k Ω	581
11	510	110	534	1.1	558	11	582
12	511	120	535	1.2	559	12	583
13	512	130	536	1.3	560	13	584
15	513	150	537	1.5	561	15	585
16	514	160	538	1.6	562	16	586
18	515	180	539	1.8	563	18	587
20	516	200	540	2.0	564	20	588
22	517	220	541	2.2	565	22	589
24	518	240	542	2.4	566	24	590
27	519	270	543	2.7	567	27	591
30	520	300	544	3.0	568	30	592
33	521	330	545	3.3	569	33	593
36	522	360	546	3.6	570		
39	523	390	547	3.9	571		
43	524	430	548	4.3	572		
47	525	470	549	4.7	573		
51	526	510	550	5.1	574		
56	527	560	551	5.6	575		
62	528	620	552	6.2	576		
68	529	680	553	6.8	577		
75	530	750	554	7.5	578		
82	531	820	555	8.2	579		
91	532	910	556	9.1	580		

R, CARBON

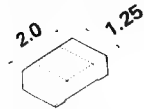
CARBON RESISTOR (1/6W)

±5%, 1/6W, non-special type
2.2Ω through 1MΩ



Parts No. 1-247-□□□-00							
Value	Parts No. -□□□-	Value	Parts No. -□□□-	Value	Parts No. -□□□-	Value	Parts No. -□□□-
1Ω	-	36Ω	796	1.2kΩ	833	43kΩ	870
1.1	-	39	797	1.3	834	47	871
1.2	-	43	798	1.5	835	51	872
1.3	-	47	799	1.6	836	56	873
1.5	-	51	800	1.8	837	62	874
1.6	-	56	801	2	838	68	875
1.8	-	62	802	2.2	839	75	876
2	-	68	803	2.4	840	82	877
2.2	767	75	804	2.7	841	91	878
2.4	768	82	805	3	842	100kΩ	879
2.7	769	91	806	3.3	843	110	880
3	770	100Ω	807	3.6	844	120	881
3.3	771	110	808	3.9	845	130	882
3.6	772	120	809	4.3	846	150	883
3.9	773	130	810	4.7	847	160	884
4.3	774	150	811	5.1	848	180	885
4.7	775	160	812	5.6	849	200	886
5.1	776	180	813	6.2	850	220	887
5.6	777	200	814	6.8	851	240	888
6.2	778	220	815	7.5	852	270	889
6.8	779	240	816	8.2	853	300	890
7.5	780	270	817	9.1	854	330	891
8.2	781	300	818	10kΩ	855	360	892
9.1	782	330	819	11	856	390	893
10Ω	783	360	820	12	857	430	894
11	784	390	821	13	858	470	895
12	785	430	822	15	859	510	896
13	786	470	823	16	860	560	897
15	787	510	824	18	861	620	898
16	788	560	825	20	862	680	899
18	789	620	826	22	863	750	900
20	790	680	827	24	864	820	901
22	791	750	828	27	865	910	902
24	792	820	829	30	866	1MΩ	903
27	793	910	830	33	867		
30	794	1kΩ	831	36	868		
33	795	1.1	832	39	869		

CHIP RESISTOR



±5% 1/10W
0Ω through 3.3MΩ

Parts No. 1-216-□□□-00

Value	Parts No. - □□□ -	Value	Parts No. - □□□ -	Value	Parts No. - □□□ -	Value	Parts No. - □□□ -	Value	Parts No. - □□□ -
0Ω	295	30	012	910	048	30	084	910	120
1Ω	—	33Ω	013	1kΩ	049	33kΩ	085	1MΩ	121
1.1	—	36	014	1.1	050	36	086	1.1	122
1.2	—	39	015	1.2	051	39	087	1.2	123
1.3	—	43	016	1.3	052	43	088	1.3	124
1.5	—	47	017	1.5	053	47	089	1.5	125
1.6	—	51	018	1.6	054	51	090	1.6	126
1.8	—	56	019	1.8	055	56	091	1.8	127
2	—	62	020	2	056	62	092	2	128
2.2	298	68	021	2.2	057	68	093	2.2	129
2.4	301	75	022	2.4	058	75	094	2.4	130
2.7	302	82	023	2.7	059	82	095	2.7	131
3	303	91	024	3	060	91	096	3	132
3.3	304	100Ω	025	3.3	061	100kΩ	097	3.3	133
3.6	305	110	026	3.6	062	110	098		
3.9	306	120	027	3.9	063	120	099		
4.3	307	130	028	4.3	064	130	100		
4.7	308	150	029	4.7	065	150	101		
5.1	297	160	030	5.1	066	160	102		
5.6	309	180	031	5.6	067	180	103		
6.2	310	200	032	6.2	068	200	104		
6.8	311	220	033	6.8	069	220	105		
7.5	312	240	034	7.5	070	240kΩ	106		
8.2	313	270	035	8.2	071	270	107		
9.1	314	300	036	9.1	072	300	108		
10Ω	001	330	037	10kΩ	073	330	109		
11	002	360	038	11	074	360	110		
12	003	390	039	12	075	390	111		
13	004	430	040	13	076	430	112		
15	005	470	041	15	077	470	113		
16	006	510	042	16	078	510	114		
18	007	560	043	18	079	560	115		
20	008	620	044	20	080	620	116		
22	009	680	045	22	081	680	117		
24	010	750	046	24	082	750	118		
27	011	820	047	27	083	820	119		

AT-16/16N

Ref.No. Parts No. Description

AT-16/16N BOARD

A-7513-046-A MOUNTED CIRCUIT BOARD
"AT-16"
A-7513-071-A MOUNTED CIRCUIT BOARD
"AT-16N"

C4 1-163-259-00 CERAMIC CHIP 220P 5% 50V
C5 1-163-259-00 CERAMIC CHIP 220P 5% 50V
C7 1-131-341-00 TANTALUM 0.1 10% 35V
C12 1-124-169-00 ELECT 100 20% 10V
C13 1-131-375-00 TANTALUM 0.22 10% 10V
C14 1-163-109-00 CERAMIC CHIP 47P 5% 50V
C16 1-163-251-00 CERAMIC CHIP 100P 5% 50V

C20 1-131-341-00 TANTALUM 0.1 10% 35V
C24 1-163-113-00 CERAMIC CHIP 68P 5% 50V
C27 1-163-037-00 CERAMIC CHIP 0.022 10% 25V
C29 1-130-495-00 MYLAR 0.1 5% 50V
C32 1-131-343-00 TANTALUM 0.22 10% 35V
C34 1-163-251-00 CERAMIC CHIP 100P 5% 50V
C35 1-163-251-00 CERAMIC CHIP 100P 5% 50V

C36 1-163-251-00 CERAMIC CHIP 100P 5% 50V
C37 1-163-251-00 CERAMIC CHIP 100P 5% 50V
C38 1-163-251-00 CERAMIC CHIP 100P 5% 50V
C42 1-163-141-00 CERAMIC CHIP 0.001 5% 50V
C49 1-163-251-00 CERAMIC CHIP 100P 5% 50V

C50 1-163-251-00 CERAMIC CHIP 100P 5% 50V
C51 1-163-251-00 CERAMIC CHIP 100P 5% 50V
C52 1-163-251-00 CERAMIC CHIP 100P 5% 50V
C72 1-131-347-00 TANTALUM 1 10% 35V
C77 1-124-271-00 ELECT 1 20% 50V
C78 1-124-270-11 ELECT 0.47 20% 50V

CN1 1-564-084-00 RECEPTACLE, 60P MALE
1-556-762-00 60P PLUG WITH HARNESS
CN2 1-564-381-11 RECEPTACLE, 6P MALE
1-562-388-11 SOCKET CONNECTOR 6P

D1 8-719-815-55 1S1555
D2 8-719-815-55 1S1555
D3 8-719-100-03 1S2835
D4 8-719-815-55 1S1555
D5 8-719-815-55 1S1555
D6 8-719-815-55 1S1555
D7 8-719-101-34 RD3.0EL1
D8 8-719-101-60 RD6.2EL1
D9 8-719-815-55 1S1555
D10 8-719-815-55 1S1555

D11 8-719-100-03 1S2835
D12 8-719-815-55 1S1555
D13 8-719-815-55 1S1555
D14 8-719-100-03 1S2835
D15 8-719-100-05 1S2837

Ref.No. Parts No. Description

D16 8-719-815-55 1S1555
D17 8-719-100-05 1S2837
D18 8-719-100-05 1S2837
D19 8-719-108-13 1S955
D20 8-719-108-13 1S955

D22 8-719-815-55 1S1555
D23 8-719-101-98 1SS97
D24 8-719-101-63 RD6.8EL1
D25 8-719-105-91 RD5.6MB2
D26 8-719-100-03 1S2835

D28 8-719-100-05 1S2837
D29 8-719-100-03 1S2835
D30 8-719-100-03 1S2835
D31 8-719-100-05 1S2837
D32 8-719-100-05 1S2837

DL1 1-415-345-00 110nS

IC1 8-759-200-81 TC4053BF: TOSHIBA
IC2 8-759-200-81 TC4053BF: TOSHIBA
IC3 8-759-200-81 TC4053BF: TOSHIBA
IC4 8-759-906-53 TL062CPS: TI
IC5 8-759-101-12 μ PC311G2: NEC

IC6 8-759-200-85 TC4093BF: TOSHIBA
IC7 8-759-200-81 TC4053BF: TOSHIBA
IC8 8-759-200-79 TC4049BF: TOSHIBA
IC9 8-759-200-79 TC4049BF: TOSHIBA
IC10 8-759-200-81 TC4053BF: TOSHIBA

IC11 8-759-909-96 LM711CH: NS
IC12 8-759-969-13 SN16913P: TI
IC13 8-759-200-89 TC4516BF: TOSHIBA
IC14 8-759-205-78 TC504013BF: TOSHIBA
IC15 8-759-300-62 HD44820B27: HITACHI

IC16 8-741-117-90 BX1179: SONY
IC17 8-741-117-90 BX1179: SONY
IC18 8-759-200-81 TC4053BF: TOSHIBA
IC19 8-759-200-83 TC4071BF: TOSHIBA
IC20 8-759-906-54 TL064CNS: TI

IC21 8-759-200-79 TC4049BF: TOSHIBA
IC23 8-759-605-18 CX518: SONY
IC24 8-759-906-53 TL062CPS: TI
IC25 8-759-906-54 TL064CNS: TI
IC26 8-759-906-53 TL062CPS: TI

Ref.No.	Parts No.	Description
L1	1-408-417-21	MICRO 47
L2	1-408-417-21	MICRO 47
L3	1-408-417-21	MICRO 47
Q1	8-729-101-25	2SC1009A
Q2	8-729-101-25	2SC1009A
Q3	8-729-101-25	2SC1009A
Q4	8-729-101-25	2SC1009A
Q5	8-729-101-25	2SC1009A
Q6	8-729-109-44	2SK94
Q7	8-729-109-44	2SK94
Q8	8-729-101-25	2SC1009A
Q9	8-729-101-25	2SC1009A
Q10	8-729-101-25	2SC1009A
Q11	8-729-101-25	2SC1009A
Q12	8-729-122-63	2SA1226
Q13	8-729-122-63	2SA1226
Q14	8-729-101-25	2SC1009A
Q15	8-729-800-44	2SK152-4
Q16	8-729-122-63	2SA1226
Q17	8-729-101-25	2SC1009A
Q18	8-729-101-25	2SC1009A
Q19	8-729-101-25	2SC1009A
Q20	8-729-122-63	2SA1226
Q21	8-729-109-44	2SK94
Q22	8-729-122-63	2SA1226
Q23	8-729-101-25	2SC1009A
Q24	8-729-122-63	2SA1226
Q25	8-729-101-25	2SC1009A
Q26	8-729-101-25	2SC1009A
Q27	8-729-122-63	2SA1226
Q28	8-729-101-25	2SC1009A
Q29	8-729-101-25	2SC1009A
Q30	8-729-101-25	2SC1009A
Q31	8-729-101-25	2SC1009A
Q32	8-729-122-63	2SA1226
Q33	8-729-122-63	2SA1226
Q34	8-729-122-63	2SA1226
Q35	8-729-101-25	2SC1009A
Q36	8-729-101-25	2SC1009A
Q37	8-729-122-63	2SA1226
Q38	8-729-101-25	2SC1009A
Q39	8-729-101-25	2SC1009A
Q40	8-729-101-25	2SC1009A

Q41	8-729-800-68	2SB815
Q42	8-729-101-25	2SC1009A
Q43	8-729-101-25	2SC1009A
Q44	8-729-101-25	2SC1009A
Q45	8-729-101-25	2SC1009A
Q46	8-729-122-63	2SA1226
Q47	8-729-101-25	2SC1009A
Q48	8-729-122-63	2SA1226
Q49	8-729-109-44	2SK94
Q50	8-729-800-36	2SD1048
Q51	8-729-101-25	2SC1009A
Q52	8-729-101-25	2SC1009A
Q54	8-729-101-25	2SC1009A
Q55	8-729-101-25	2SC1009A
Q56	8-729-101-25	2SC1009A
Q57	8-729-109-44	2SK94
Q58	8-729-109-44	2SK94
Q59	8-729-109-44	2SK94
Q60	8-729-109-44	2SK94
Q61	8-729-109-44	2SK94
Q63	8-729-109-44	2SK94
Q64	8-729-101-25	2SC1009A
Q65	8-729-101-25	2SC1009A
R31	1-215-458-00	METAL 36K 1% 1/6W
R33	1-215-481-00	METAL 330K 1% 1/6W
R111	1-215-465-00	METAL 68K 1% 1/6W
R154	1-247-696-11	CARBON 47 5% 1/4W
R233	1-247-831-00	CARBON 1K 5% 1/6W
RP1	1-231-387-00	RESISTOR, BLOCK
RV1	1-228-460-00	METAL 20K
RV2	1-228-457-00	METAL 2K
S4	1-554-076-00	SLIDE
S5	1-554-076-00	SLIDE
X1	1-527-532-00	400KHz

CN-8, CN-9, CN-65, DF-17

Ref.No. Parts No. Description

CN-8 BOARD

CN102 1-934-795-11 CCU-15PIN CONNECTOR
 WITH HARNESS

CN-9 BOARD

A-7520-172-A MOUNTED CIRCUIT BOARD
 "CN-9"

CN1 1-564-154-00 RECEPTACLE, 14P
CN2 1-564-379-11 RECEPTACLE, 3P

D1 8-719-815-55 1S1555
D2 8-719-815-55 1S1555

TM1 1-548-119-21 TIMER

R1 1-215-493-00 METAL 1M 1% 1/6W
R2 1-215-493-00 METAL 1M 1% 1/6W
R3 1-215-493-00 METAL 1M 1% 1/6W

CN-65 BOARD

1-608-897-13 PRINTED CIRCUIT BOARD "CN-65"
 (UC S/N UP TO 10600)
 (J S/N UP TO 15300)
 (P S/N UP TO 21000)
1-608-897-14 PRINTED CIRCUIT BOARD "CN-65"
 (UC S/N 10601 AND HIGHER)
 (J S/N 15301 AND HIGHER)
 (P S/N 21001 AND HIGHER)

CN1 1-562-221-00 RECEPTACLE, 12P FEMALE
 "LENS"

Ref.No. Parts No. Description

DF-17 BOARD

A-7511-888-A MOUNTED CIRCUIT BOARD
 "DF-17"

C1 1-124-342-00 ELECT 3.3 20% 200V
C2 1-108-415-00 MYLAR 0.0033 10% 200V
C3 1-123-380-00 ELECT 1 20% 100V
C4 1-123-252-00 ELECT 1 160V
C5 1-130-815-00 POLYESTER 0.015 5% 630V

C6 1-130-815-00 POLYESTER 0.015 5% 630V
C19 1-124-287-00 ELECT(NONPOLAR) 10 20% 10V
C20 1-124-287-00 ELECT(NONPOLAR) 10 20% 10V
C25 1-124-342-00 ELECT 3.3 20% 200V
C33 1-123-354-00 ELECT 3.3 20% 50V

C36 1-123-354-00 ELECT 3.3 20% 50V
C40 1-108-425-00 MYLAR 0.022 10% 200V
C41 1-108-425-00 MYLAR 0.022 10% 200V
C47 1-124-287-00 ELECT(NONPOLAR) 10 20% 10V
C55 1-124-287-00 ELECT(NONPOLAR) 10 20% 10V

C60 1-161-894-00 CERAMIC 0.1 50V
C61 1-161-894-00 CERAMIC 0.1 50V
C62 1-161-894-00 CERAMIC 0.1 50V
C63 1-161-894-00 CERAMIC 0.1 50V
C66 1-161-013-00 CERAMIC 0.01 25V

CN1 1-560-935-00 RECEPTACLE, 40P MALE
 1-560-707-00 POLARISING KEY

D1 8-719-815-55 1S1555
D2 8-719-815-55 1S1555
D3 8-719-815-55 1S1555
D4 8-719-815-55 1S1555
D5 8-719-815-55 1S1555
D6 8-719-815-55 1S1555

IC1 8-741-105-10 BX1051: SONY
IC2 8-741-105-30 BX1053: SONY
IC3 8-741-105-30 BX1053: SONY
IC4 8-741-105-30 BX1053: SONY
IC5 8-759-990-62 TL062CP: TI

IC6 8-741-108-00 BX1080: SONY
IC7 8-759-900-64 TL064CN: TI
IC8 8-741-105-10 BX1051: SONY
IC9 8-759-990-82 TL082CP: TI
IC10 8-741-105-30 BX1053: SONY

Ref.No.	Parts No.	Description	Ref.No.	Parts No.	Description
IC11	8-741-105-30	BX1053: SONY	R89	1-215-476-00	METAL 200K 1% 1/6W
IC12	8-741-105-30	BX1053: SONY	R94	1-215-469-00	METAL 100K 1% 1/6W
IC13	8-759-907-92	μ A796HCA: FSC	R103	1-215-476-00	METAL 200K 1% 1/6W
			R104	1-215-476-00	METAL 200K 1% 1/6W
			R107	1-215-481-00	METAL 330K 1% 1/6W
Q2	8-729-177-54	2SA1175	R108	1-215-469-00	METAL 100K 1% 1/6W
Q3	8-729-200-17	2SA1091	R110	1-215-469-00	METAL 100K 1% 1/6W
Q4	8-729-255-12	2SC2551	R116	1-215-485-00	METAL 470K 1% 1/6W
Q5	8-729-255-12	2SC2551	R121	1-215-461-00	METAL 47K 1% 1/6W
Q6	8-729-200-17	2SA1091	R122	1-215-461-00	METAL 47K 1% 1/6W
Q7	8-765-450-20	2SK125	R123	1-215-461-00	METAL 47K 1% 1/6W
Q13	8-729-178-54	2SC2785	R124	1-215-461-00	METAL 47K 1% 1/6W
Q17	8-765-450-20	2SK125	R129	1-215-476-00	METAL 200K 1% 1/6W
Q18	8-729-178-54	2SC2785	R132	1-215-469-00	METAL 100K 1% 1/6W
Q19	8-729-178-54	2SC2785	R137	1-214-971-00	METAL 2M 1% 1/4W
			R139	1-215-463-00	METAL 56K 1% 1/6W
R15	1-215-479-00	METAL 270K 1% 1/6W	RV1	1-228-459-00	METAL 10K
R16	1-215-486-00	METAL 510K 1% 1/6W	RV2	1-228-459-00	METAL 10K
R17	1-214-968-00	METAL 1.5M 1% 1/4W	RV3	1-226-101-00	METAL 1M
R18	1-215-479-00	METAL 270K 1% 1/6W	RV4	1-228-465-00	METAL 1M
R19	1-215-493-00	METAL 1M 1% 1/6W	RV5	1-228-477-00	METAL 100K
R20	1-215-493-00	METAL 1M 1% 1/6W	RV6	1-228-477-00	METAL 100K
R29	1-214-968-00	METAL 1.5M 1% 1/4W	RV7	1-228-477-00	METAL 100K
R30	1-215-469-00	METAL 100K 1% 1/6W	RV8	1-228-477-00	METAL 100K
R32	1-215-464-00	METAL 62K 1% 1/6W	RV9	1-228-461-00	METAL 50K
R33	1-215-464-00	METAL 62K 1% 1/6W	RV10	1-228-908-00	METAL 50K
R34	1-215-468-00	METAL 91K 1% 1/6W	RV11	1-228-908-00	METAL 50K
R35	1-215-468-00	METAL 91K 1% 1/6W	RV12	1-228-908-00	METAL 50K
R36	1-215-476-00	METAL 200K 1% 1/6W	RV13	1-228-908-00	METAL 50K
R37	1-215-476-00	METAL 200K 1% 1/6W	RV14	1-228-932-00	METAL 10K
R38	1-215-476-00	METAL 200K 1% 1/6W	RV15	1-228-932-00	METAL 10K
R39	1-215-476-00	METAL 200K 1% 1/6W	RV16	1-228-932-00	METAL 10K
R40	1-215-472-00	METAL 130K 1% 1/6W	RV17	1-228-932-00	METAL 10K
R41	1-215-472-00	METAL 130K 1% 1/6W	RV18	1-228-458-00	METAL 5K
R57	1-215-459-00	METAL 39K 1% 1/6W	RV19	1-228-477-00	METAL 100K
R58	1-215-466-00	METAL 75K 1% 1/6W	RV20	1-228-477-00	METAL 100K
R60	1-215-469-00	METAL 100K 1% 1/6W	RV21	1-228-477-00	METAL 100K
R64	1-215-471-00	METAL 120K 1% 1/6W	RV22	1-228-477-00	METAL 100K
R65	1-215-471-00	METAL 120K 1% 1/6W	RV24	1-228-459-00	METAL 10K
R66	1-215-460-00	METAL 43K 1% 1/6W	RV25	1-226-101-00	METAL 1M
R67	1-215-460-00	METAL 43K 1% 1/6W	RV26	1-228-464-00	METAL 500K
R84	1-215-479-00	METAL 270K 1% 1/6W	RV27	1-228-908-00	METAL 50K
R85	1-215-487-00	METAL 560K 1% 1/6W	RV28	1-228-908-00	METAL 50K
R86	1-215-479-00	METAL 270K 1% 1/6W	RV29	1-228-908-00	METAL 50K
R87	1-215-489-00	METAL 680K 1% 1/6W	RV30	1-228-908-00	METAL 50K
R88	1-215-476-00	METAL 200K 1% 1/6W	RV31	1-228-462-00	METAL 100K

DF-17, EN-33/33A

Ref.No.	Parts No.	Description	Ref.No.	Parts No.	Description
RV32	1-228-462-00	METAL 100K	IC4	8-759-240-53	TC4053BP: TOSHIBA
RV33	1-228-462-00	METAL 100K	IC5	8-749-910-55	BX1055: SONY
RV34	1-228-462-00	METAL 100K	IC6	8-749-931-50	BX315: SONY
RV35	1-228-462-00	METAL 100K	IC7	8-759-911-77	CX7968A: SONY
			IC8	8-759-906-59	CX22017: SONY
			IC10	8-759-906-13	μA79M05AHC: FSC
S1	1-554-075-00	SLIDE			
S2	1-554-076-00	SLIDE			
			L1	1-408-417-00	MICRO 47
			L3	1-408-417-00	MICRO 47
			L4	1-408-417-00	MICRO 47
T1	1-433-260-00	COUPLING	L5	1-408-417-00	MICRO 47
			L6	1-408-849-00	MICRO 330 (NTSC)
			L7	1-408-148-00	MICRO 10 (NTSC)
THP1	1-806-627-21	1K	L8	1-408-150-00	MICRO 22 (NTSC)
				1-408-170-00	MICRO 18 (PAL)
			L9	1-408-851-00	MICRO 560 (NTSC)
			L11	1-408-358-00	MICRO 100 (NTSC)
				1-408-368-00	MICRO 220 (PAL)
			L12	1-408-417-00	MICRO 47
			L13	1-408-145-00	COIL 19 (NTSC)
			L17	1-408-417-00	MICRO 47
			L18	1-408-406-00	MICRO 5.6
EN-33/33A BOARD					
	A-7513-068-A	MOUNTED CIRCUIT BOARD	LV1	1-408-844-00	22 (NTSC)
		"EN-33" (NTSC)		1-408-845-00	100 (PAL)
	A-7513-070-A	MOUNTED CIRCUIT BOARD	LV2	1-408-844-00	22
		"EN-33A" (PAL)			
			Q1	8-729-364-12	2SC641K
			Q2	8-729-101-25	2SC1009A
			Q3	8-729-101-25	2SC1009A
C46	1-124-286-00	ELECT 33 20% 16V	Q4	8-729-101-25	2SC1009A
C62	1-124-286-00	ELECT 33 20% 16V	Q5	8-729-101-25	2SC1009A
C75	1-163-243-00	CERAMIC CHIP 47PF 5% 50V			
C109	1-163-243-00	CERAMIC CHIP 47PF 5% 50V	Q6	8-729-122-63	2SA1226
C128	1-163-105-00	CERAMIC CHIP 33PF 5% 50V	Q7	8-729-122-63	2SA1226
		(NTSC)	Q8	8-729-122-63	2SA1226
C129	1-163-088-00	CERAMIC CHIP 5P 50V	Q9	8-729-122-63	2SA1226
			Q10	8-729-101-25	2SC1009A
			Q11	8-729-101-25	2SC1009A
CN1	1-560-935-00	RECEPTACLE, 40P MALE	Q13	8-729-122-63	2SA1226
	1-560-707-00	POLARISING KEY	Q14	8-729-101-25	2SC1009A
CN3	1-564-591-11	RECEPTACLE, 3P MALE	Q15	8-729-100-66	2SC1623
	1-561-724-00	PLUG HOUSING 3P	Q16	8-729-101-25	2SC1009A
CN4	1-564-591-11	RECEPTACLE, 3P MALE			
	1-561-724-00	PLUG HOUSING 3P			
D5	8-719-815-55	1S1555			
DL1	1-415-291-00	790nS (NTSC)			
	1-415-304-00	338nS (PAL)			
DL2	1-415-290-00	410nS (NTSC)			

Ref.No.	Parts No.	Description	Ref.No.	Parts No.	Description
Q17	8-729-101-25	2SC1009A	R63	1-214-504-00	METAL 9.09K 0.5% 1/2W(NTSC)
Q18	8-729-101-25	2SC1009A		1-214-485-00	METAL 13.7K 1% 1/2W (PAL)
Q19	8-729-101-25	2SC1009A	R87	1-214-502-00	METAL 2.67K 0.5% 1/4W(NTSC)
Q20	8-729-101-25	2SC1009A		1-214-482-00	METAL 2.55K 1% 1/2W (PAL)
Q21	8-729-101-25	2SC1009A	R88	1-214-501-00	METAL 2.32K 0.5% 1/4W(NTSC)
				1-214-485-00	METAL 13.7K 1% 1/2W (PAL)
Q22	8-729-101-25	2SC1009A	R96	1-215-829-11	METAL 91K 1% 1/8W (PAL)
Q23	8-729-101-25	2SC1009A	R102	1-215-830-11	METAL 100K 1% 1/8W (PAL)
Q24	8-729-101-25	2SC1009A (NTSC)			
Q25	8-729-101-25	2SC1009A (NTSC)	R127	1-214-500-00	METAL 2.26K 0.5% 1/4W(NTSC)
Q26	8-729-101-25	2SC1009A (NTSC)	R128	1-214-503-00	METAL 3.32K 0.5% 1/4W(NTSC)
			R131	1-214-483-00	METAL 4.99K 1% 1/2W (PAL)
Q27	8-729-101-25	2SC1009A	R132	1-214-482-00	METAL 2.55K 1% 1/2W (PAL)
Q28	8-729-122-63	2SA1226	R164	1-214-482-00	METAL 2.55K 1% 1/2W
Q29	8-729-101-25	2SC1009A			
Q30	8-729-101-25	2SC1009A	R165	1-214-485-00	METAL 13.7K 1% 1/2W
Q31	8-729-122-63	2SA1226	R179	1-214-482-00	METAL 2.55K 1% 1/2W
			R180	1-214-483-00	METAL 4.99K 1% 1/2W
Q32	8-729-101-25	2SC1009A	R212	1-215-824-11	METAL 56K 1% 1/6W
Q33	8-729-101-25	2SC1009A	R214	1-215-824-11	METAL 56K 1% 1/6W
Q34	8-729-101-25	2SC1009A			
Q35	8-729-101-25	2SC1009A	R218	1-215-829-11	METAL 91K 1% 1/8W (PAL)
Q36	8-729-101-25	2SC1009A	R219	1-215-829-11	METAL 91K 1% 1/8W (PAL)
			R260	1-215-473-00	METAL 150K 1% 1/6W (NTSC)
Q37	8-729-101-25	2SC1009A	R261	1-215-474-00	METAL 160K 1% 1/6W (NTSC)
Q38	8-729-122-63	2SA1226	R262	1-215-474-00	METAL 160K 1% 1/6W (NTSC)
Q39	8-729-101-25	2SC1009A	R263	1-215-473-00	METAL 150K 1% 1/6W (NTSC)
Q40	8-729-101-25	2SC1009A			
Q41	8-729-101-25	2SC1009A			
			RV1	1-228-459-00	METAL 10K
Q42	8-729-101-25	2SC1009A	RV2	1-228-456-00	METAL 1K
Q43	8-729-101-25	2SC1009A	RV4	1-228-459-00	METAL 10K (NTSC)
Q44	8-729-101-25	2SC1009A	RV5	1-228-457-00	METAL 2K (NTSC)
Q45	8-729-101-25	2SC1009A	RV6	1-228-458-00	METAL 5K
Q46	8-729-101-25	2SC1009A			
			RV7	1-228-459-00	METAL 10K
Q47	8-729-101-25	2SC1009A	RV8	1-228-456-00	METAL 1K
Q48	8-729-101-25	2SC1009A	RV9	1-228-456-00	METAL 1K
Q49	8-729-101-25	2SC1009A	RV10	1-228-457-00	METAL 2K
Q50	8-729-101-25	2SC1009A	RV11	1-228-457-00	METAL 2K
Q51	8-729-101-25	2SC1009A			
			RV12	1-228-457-00	METAL 2K
Q52	8-729-101-25	2SC1009A	RV13	1-226-369-00	METAL 5K
Q53	8-729-122-63	2SA1226	RV14	1-228-457-00	METAL 2K
Q54	8-729-122-63	2SA1226	RV15	1-228-458-00	METAL 5K
Q55	8-729-122-63	2SA1226	RV16	1-228-456-00	METAL 1K
Q56	8-729-101-25	2SC1009A			
Q65	8-729-364-12	2SC641K	RV17	1-226-369-00	METAL 5K
			RV18	1-228-454-00	METAL 200
			RV19	1-228-454-00	METAL 200
R14	1-214-503-00	METAL 3.32K 0.5% 1/4W(NTSC)	RV20	1-228-459-00	METAL 10K (NTSC)
	1-214-483-00	METAL 4.99K 1% 1/2W (PAL)	RV21	1-228-458-00	METAL 5K (NTSC)
R15	1-214-499-00	METAL 1.62K 0.5% 1/4W(NTSC)			
	1-214-482-00	METAL 2.55K 1% 1/2W (PAL)	S1	1-552-509-00	SLIDE
R16	1-214-504-00	METAL 9.09K 0.5% 1/4W(NTSC)	S2	1-552-509-00	SLIDE
	1-214-485-00	METAL 13.7K 1% 1/2W (PAL)	S3	1-554-923-11	TOGGLE (NTSC)
R61	1-214-503-00	METAL 3.32K 0.5% 1/4W(NTSC)		1-554-399-00	TOGGLE (PAL)
	1-214-483-00	METAL 4.99K 1% 1/2W (PAL)			
R62	1-214-499-00	METAL 1.62K 0.5% 1/2W(NTSC)			
	1-214-482-00	METAL 2.55K 1% 1/2W (PAL)			

HN-25, HN-30, HP-14

Ref.No.	Parts No.	Description	Ref.No.	Parts No.	Description
HN-25 BOARD			CN16	1-564-155-00	RECEPTACLE, 6P MALE
	1-609-560-00	PRINTED CIRCUIT BOARD	CN17	1-564-153-00	RECEPTACLE, 12P MALE
		"HN-25"		1-561-178-00	PLUG, HOUSING 12P
				1-560-768-00	PLUG, CONTACT
				1-508-944-00	INDEX PIN
			CN18	1-564-153-00	RECEPTACLE, 12P MALE
				1-561-178-00	PLUG, HOUSING 12P
				1-560-768-00	PLUG, CONTACT
				1-508-944-00	INDEX PIN
			CN19	1-564-080-00	RECEPTACLE, 12P MALE
				1-561-178-00	PLUG, HOUSING 12P
				1-560-768-00	PLUG, CONTACT
				1-508-944-00	INDEX PIN
			CN20	1-564-079-00	RECEPTACLE, 10P MALE
				1-561-177-00	PLUG, HOUSING 10P
				1-560-768-00	PLUG, CONTACT
				1-508-944-00	INDEX PIN
			CN21	1-564-168-11	RECEPTACLE, 3P MALE
HN-30 BOARD			RV1	1-228-450-00	WIREWOUND 10K "PEDESTAL"
	A-7513-069-A	MOUNTED CIRCUIT BOARD			
		"HN-30"			
	1-560-707-00	POLARISING KEY			
	1-609-999-00	PRINTED CIRCUIT BOARD			
		"HN-27"			
CN1	1-562-066-00	RECEPTACLE, 40P FEMALE			
CN2	1-562-066-00	RECEPTACLE, 40P FEMALE			
CN3	1-562-066-00	RECEPTACLE, 40P FEMALE			
CN4	1-562-066-00	RECEPTACLE, 40P FEMALE			
CN5	1-562-066-00	RECEPTACLE, 40P FEMALE			
CN6	1-562-066-00	RECEPTACLE, 40P FEMALE			
CN7	1-562-112-21	RECEPTACLE, 50P MALE			
CN8	1-556-762-00	60P PLUG WITH HARNESS (AT)			
CN9	1-556-763-00	40P PLUG WITH HARNESS (SG)			
CN10	1-556-764-00	50P PLUG WITH HARNESS (SH)			
CN11	1-564-153-00	RECEPTACLE, 12P MALE			
	1-933-827-00	12P PLUG WITH HARNESS (PA-HN)			
CN12	1-564-532-00	RECEPTACLE, 16P MALE			
	1-561-035-00	PLUG, HOUSING 16P			
	1-560-767-00	PLUG, CONTACT AWG22 TO 24			
	1-560-768-00	PLUG, CONTACT AWG24 TO 28			
	1-508-944-00	INDEX PIN			
CN13	1-562-222-00	RECEPTACLE, 6P FEMALE			
		"REMOTE"			
CN14	1-561-781-21	RECEPTACLE, BNC "TEST OUT"			
CN15	1-564-156-00	RECEPTACLE, 12P MALE			
	1-561-171-00	PLUG, HOUSING 12P			
	1-560-768-00	PLUG, CONTACT			
	1-508-944-00	INDEX PIN			
			HP-14 BOARD		
				A-7513-059-A	MOUNTED CIRCUIT BOARD
					"HP-14"
				1-934-869-11	3P PLUG WITH HARNESS
			C2	1-123-827-00	ELECT 220 20% 4V
			C5	1-123-661-00	ELECT 100 20% 6.3V
			C6	1-123-616-00	ELECT 4.7 20% 25V
			IC1	8-751-840-00	CX184: SONY

Ref.No.	Parts No.	Description	Ref.No.	Parts No.	Description
RV1	1-230-337-11	METAL 10K "VOLUME"	D4	8-719-815-55	1S1555
			D5	8-719-709-25	1S1925P
			D6	8-719-100-38	RD6.2EB2
			D7	8-719-709-25	1S1925P
SP1	1-503-059-00	4Ω 0.1W	D8	8-719-709-25	1S1925P
			D9	8-719-815-55	1S1555
			D10	8-719-100-38	RD6.2EB2
			D12	8-719-815-55	1S1555
			D13	8-719-100-28	RD4.7EB3
			D14	8-719-815-55	1S1555
			D15	8-719-815-55	1S1555

IE-6/6P BOARD

	A-7511-889-B	MOUNTED CIRCUIT BOARD "IE-6" (NTSC)	DL1	1-415-265-31	1H x 2 (NTSC)
				1-415-266-31	1H x 2 (PAL)
	A-7511-911-B	MOUNTED CIRCUIT BOARD "IE-6P" (PAL)	DL2	1-415-166-00	165nS (NTSC)
				1-415-302-00	120nS (PAL)
				(S/N UP TO 22700 BVP-3AP(EK) S/N UP TO 30110 BVP-3AS(AE) S/N UP TO 10055 BVP-30AP(EK))	
				1-415-237-00	140nS (PAL)
				(S/N 22701 AND HIGHER BVP-3AP(EK) S/N 30111 AND HIGHER BVP-3AS(AE) S/N 10056 AND HIGHER BVP-30AP(EK))	
C4	1-161-894-00	CERAMIC 0.1 50V	IC1	8-759-907-92	μA796HCA: FSC
C6	1-161-894-00	CERAMIC 0.1 50V	IC2	8-759-907-34	μA733HC: FSC
C12	1-161-894-00	CERAMIC 0.1 50V	IC3	8-759-907-34	μA733HC: FSC
C24	1-161-894-00	CERAMIC 0.1 50V	IC4	8-759-990-62	TL062CP: TI
C25	1-161-894-00	CERAMIC 0.1 50V	IC5	8-759-907-34	μA733HC: FSC
C26	1-161-894-00	CERAMIC 0.1 50V	IC6	8-759-907-92	μA796HCA: FSC
C28	1-161-013-00	CERAMIC 0.01 10% 25V	IC7	8-759-909-96	LM711CH: NS
C37	1-161-894-00	CERAMIC 0.1 50V	IC8	8-749-939-33	BX3933: SONY
C42	1-131-377-00	TANTALUM 10 10% 10V	IC9	8-759-240-53	TC4053BP: TOSHIBA
C60	1-161-894-00	CERAMIC 0.1 50V			
C62	1-161-894-00	CERAMIC 0.1 50V			
C65	1-131-347-00	TANTALUM 1 10% 35V			
C66	1-102-938-00	CERAMIC 1PF ±0.5PF 50V			
C82	1-102-964-00	CERAMIC 36P 5% 50V (PAL)			
C83	1-130-479-00	MYLAR 0.0047 5% 50V			
C97	1-161-013-00	CERAMIC 0.01 10% 25V	L4	1-408-358-00	MICRO 100
C98	1-161-013-00	CERAMIC 0.01 10% 25V	L5	1-408-150-00	MICRO 22
C99	1-161-013-00	CERAMIC 0.01 10% 25V	L10	1-408-147-00	MICRO 2.2
C100	1-161-013-00	CERAMIC 0.01 10% 25V	L11	1-408-150-00	MICRO 22
			L13	1-408-357-00	MICRO 33 (NTSC)
				1-408-150-00	MICRO 22 (PAL)
CN1	1-560-935-00	RECEPTACLE, 40P MALE	L14	1-408-357-00	MICRO 33 (NTSC)
	1-560-707-00	POLARISING KEY		1-408-150-00	MICRO 22 (PAL)
			L18	1-408-954-00	MICRO 47
			L19	1-408-850-00	MICRO 390
CV1	1-141-206-00	TRIMMER 45PF	Q1	8-729-364-12	2SC641K
CV2	1-141-240-00	TRIMMER 20PF	Q2	8-729-178-54	2SC2785
CV3	1-141-206-00	TRIMMER 45PF	Q3	8-729-110-53	2SA1005
			Q4	8-729-117-54	2SA1175
			Q5	8-729-178-73	2SC2787

Ref.No.	Parts No.	Description
Q6	8-729-178-73	2SC2787
Q7	8-729-110-53	2SA1005
Q8	8-769-132-00	2SK-121-2
Q9	8-729-266-93	2SC2669
Q10	8-729-266-93	2SC2669
Q11	8-729-178-73	2SC2787
Q12	8-729-178-73	2SC2787
Q13	8-729-178-73	2SC2787
Q14	8-729-178-73	2SC2787
Q15	8-729-178-73	2SC2787
Q16	8-729-110-53	2SA1005
Q17	8-729-900-71	J271
Q18	8-729-266-93	2SC2669
Q19	8-729-266-93	2SC2669
Q20	8-729-178-54	2SC2785
Q21	8-729-900-75	J175
Q22	8-729-900-75	J175
Q23	8-729-900-75	J175
Q24	8-729-110-53	2SC1005
Q25	8-729-110-53	2SC1005
Q26	8-729-110-53	2SA1005
Q27	8-729-178-73	2SC2787
Q28	8-729-178-73	2SC2787
Q29	8-729-178-73	2SC2787
Q30	8-729-178-73	2SC2787
Q31	8-729-178-73	2SC2787
Q32	8-769-194-00	2SK43-4
Q33	8-729-110-53	2SA1005
Q34	8-729-110-53	2SA1005
Q35	8-729-178-73	2SC2787
Q36	8-729-178-73	2SC2787
Q37	8-729-110-53	2SA1005
Q38	8-765-222-20	2SC1963
Q39	8-729-800-43	2SK152-3
Q40	8-729-178-73	2SC2787
Q41	8-729-117-54	2SA1175
Q42	8-729-201-84	2SC3112
Q43	8-729-110-53	2SA1005
Q44	8-729-178-73	2SC2787
Q45	8-729-110-53	2SA1005
Q46	8-729-178-73	2SC2787
Q47	8-729-110-53	2SA1005
Q48	8-729-117-54	2SA1175
Q49	8-729-178-54	2SC2785
Q51	8-729-201-84	2SC3112

Ref.No.	Parts No.	Description
Q52	8-729-117-54	2SA1175
Q53	8-729-117-54	2SA1175
Q54	8-729-800-43	2SK152-3
Q55	8-729-110-53	2SA1005
Q56	8-729-364-12	2SC641K
Q57	8-729-117-54	2SA1175
Q58	8-729-117-54	2SA1175
Q59	8-729-117-54	2SA1175
Q60	8-729-117-54	2SA1175
Q61	8-729-178-54	2SC2785
Q62	8-729-364-12	2SC641K
Q63	8-729-900-76	J176
Q64	8-729-178-54	2SC2785
Q65	8-729-178-73	2SC2787
Q66	8-729-178-73	2SC2787
Q67	8-729-117-54	2SA1175
Q68	8-729-117-54	2SA1175
R147	1-215-820-11	METAL 39K 1% 1/8W
RV1	1-228-457-00	METAL 2K
RV2	1-228-470-00	METAL 500
RV4	1-228-456-00	METAL 1K
RV5	1-228-472-00	METAL 2K
RV6	1-228-470-00	METAL 500
RV7	1-228-472-00	METAL 2K
RV8	1-228-457-00	METAL 2K
RV9	1-228-458-00	METAL 5K
RV10	1-228-459-00	METAL 10K
RV11	1-228-458-00	METAL 5K
S1	1-554-399-00	TOGGLE
S2	1-554-076-00	SLIDE
S3	1-554-399-00	TOGGLE
X1	1-527-861-21	30MHz

Ref.No.	Parts No.	Description
PA-37 BOARD		
	A-7513-057-A	MOUNTED CIRCUIT BOARD "PA-37"
C5	1-163-220-11	CERAMIC CHIP 3P 50V
C10	1-163-218-11	CERAMIC CHIP 1.5P 50V
C15	1-163-220-11	CERAMIC CHIP 3P 50V
C16	1-163-991-11	CERAMIC CHIP 0.0022 10% 50V
CN1	1-564-158-00	RECEPTACLE, 5P MALE
	1-933-833-00	5P PLUG WITH HARNESS (PP-PA)
CN2	1-564-158-00	RECEPTACLE, 5P MALE
	1-933-833-21	5P PLUG WITH HARNESS (PP-PA)
CN3	1-564-158-00	RECEPTACLE, 5P MALE
	1-933-833-31	5P PLUG WITH HARNESS (PP-PA)
CN4	1-564-160-00	RECEPTACLE, 12P MALE
	1-933-827-00	12P PLUG WITH HARNESS (PA-HN)
CV1	1-141-206-00	TRIMMER 45PF
CV2	1-141-206-00	TRIMMER 45PF
CV3	1-141-206-00	TRIMMER 45PF
CV4	1-141-299-11	TRIMMER 6PF
CV5	1-141-299-11	TRIMMER 6PF
CV6	1-141-299-11	TRIMMER 6PF
CV7	1-141-299-11	TRIMMER 6PF
CV8	1-141-291-11	TRIMMER 20PF
CV9	1-141-299-11	TRIMMER 6PF
CV10	1-141-291-11	TRIMMER 20PF
CV11	1-141-299-11	TRIMMER 6PF
CV12	1-141-291-11	TRIMMER 20PF
D1	8-719-901-33	1SS133
D2	8-719-901-33	1SS133
D3	8-719-901-33	1SS133

Ref.No.	Parts No.	Description
L6	1-408-429-00	MICRO 470
L7	1-408-417-21	MICRO 47
L8	1-408-417-21	MICRO 47
L9	1-408-417-21	MICRO 47
L10	1-408-429-00	MICRO 470
L11	1-408-417-21	MICRO 47
L12	1-408-417-21	MICRO 47
Q1	8-729-122-63	2SA1226
Q2	8-729-101-25	2SC1009A
Q3	8-729-122-63	2SA1226
Q4	8-729-101-25	2SC1009A
Q5	8-729-122-63	2SA1226
Q6	8-729-101-25	2SC1009A
Q7	8-729-122-63	2SA1226
Q8	8-729-101-25	2SC1009A
Q9	8-729-122-63	2SA1226
Q10	8-729-101-25	2SC1009A
Q11	8-729-122-63	2SA1226
Q12	8-729-101-25	2SC1009A
RV1	1-228-457-00	METAL 2K
RV2	1-228-457-00	METAL 2K
RV3	1-228-461-00	METAL 50K
RV4	1-228-457-00	METAL 2K
RV5	1-228-457-00	METAL 2K
RV6	1-228-461-00	METAL 50K
RV7	1-228-457-00	METAL 2K
RV8	1-228-457-00	METAL 2K
RV9	1-228-461-00	METAL 50K
RV10	1-228-464-00	METAL 500K
RV11	1-228-464-00	METAL 500K
RV12	1-228-464-00	METAL 500K

PP-10 BOARD

L1	1-408-417-21	MICRO 47	1-608-774-14	PRINTED CIRCUIT BOARD "PP-10"
L2	1-408-429-00	MICRO 470	1-564-158-00	RECEPTACLE, 5P MALE
L3	1-408-417-21	MICRO 47		
L4	1-408-417-21	MICRO 47		
L5	1-408-417-21	MICRO 47		
C1	1-163-830-11	CERAMIC CHIP 0.022 5% 250V		
Q1	8-765-710-20	2SK284-2		
R1	1-216-321-11	METAL CHIP 2M 2% 1/8W		
R2	1-216-253-00	METAL CHIP 200K 5% 1/8W		

PR-75

Ref. No.	Parts No.	Description	Ref. No.	Parts No.	Description
PR-75 BOARD			D12	8-719-815-59	1S1555-S
			D13	8-719-101-23	1SS123
	A-7513-356-A	MOUNTED CIRCUIT BOARD	D14	8-719-101-98	1SS97-0
		"RP-75"	D15	8-719-815-59	1S1555-S
			D16	8-719-815-59	1S1555-S
			D17	8-719-815-59	1S1555-S
C3	1-161-892-21	CERAMIC 0.047 50V	D18	8-719-815-59	1S1555-S
C4	1-124-271-00	ELECT 1 20% 50V	D19	8-719-100-03	1S2835
C6	1-124-283-00	ELECT 4.7 20% 16V	D20	8-719-101-98	1SS97-0
C7	1-161-038-00	CERAMIC CHIP 0.1 25V	D21	8-719-101-23	1SS123
C8	1-163-038-00	CERAMIC CHIP 0.1 25V			
			D22	8-719-815-59	1S1555-S
C13	1-124-584-00	ELECT 100 20% 10V	D23	8-719-101-23	1SS123
C23	1-161-892-21	CERAMIC 0.047 50V	D24	8-719-101-98	1SS97-0
C24	1-124-271-00	ELECT 1 20% 50V	D25	8-719-815-59	1S1555-S
C26	1-125-283-00	ELECT 4.7 20% 16V	D26	8-719-815-59	1S1555-S
C33	1-131-347-00	TANTALUM 1 10% 35V			
			D27	8-719-815-59	1S1555-S
C34	1-131-347-00	TANTALUM 1 10% 35V	D28	8-719-815-59	1S1555-S
C35	1-131-347-00	TANTALUM 1 10% 35V	D29	8-719-100-03	1S2835
C43	1-161-892-21	CERAMIC 0.047 50V	D30	8-719-100-03	1S2835
C44	1-124-271-00	ELECT 1 20% 50V			
C46	1-124-283-00	ELECT 4.7 20% 16V			
			IC1	8-759-906-53	TL062CPS; TI
CN1	1-560-935-00	RECEPTACLE, MALE, 40P	IC2	8-759-906-53	TL062CPS; TI
CN2	1-560-690-11	RECEPTACLE, 4P	IC3	8-759-906-53	TL062CPS; TI
	1-561-724-00	PLUG, SHORT	IC4	8-759-906-53	TL062CPS; TI
			IC5	8-759-906-53	TL062CPS; TI
			IC6	8-749-931-50	BX-315; SONY
CV1	1-141-298-11	10PF~2PF	IC7	8-759-200-81	TC4053BF; TOSHIBA
CV2	1-141-298-11	10PF~2PF			
CV3	1-141-298-11	10PF~2PF			
CV4	1-141-300-11	CERAMIC TRIMMER	L1	1-408-417-00	MICRO 47
			L2	1-408-417-00	MICRO 47
			L3	1-408-413-00	MICRO 22
D1	8-719-101-23	1SS123			
D2	8-719-815-59	2S1555-S			
D3	8-719-101-23	1SS123	Q1	8-729-175-73	2SC2757
D4	8-719-101-98	1SS97-0	Q2	8-729-175-73	2SC2757
D5	8-719-815-59	1S1555-S	Q3	8-729-175-73	2SC2757
			Q4	8-729-175-73	2SC2757
D6	8-719-815-59	1S1555-S	Q5	8-729-109-44	2SK94
D7	8-719-815-59	1S1555-S			
D8	8-719-815-59	1S1555-S	Q6	8-729-175-73	2SC2757
D9	8-719-101-23	1SS123	Q7	8-729-122-63	2SA1226
D11	8-719-101-23	1SS123	Q8	8-729-122-63	2SA1226
			Q9	8-729-122-63	2SA1226
			Q10	8-729-122-63	<

Ref. No.	Parts No.	Description
Q11	8-729-175-73	2SC2757
Q12	8-729-175-73	2SC2757
Q13	8-729-175-73	2SC2757
Q14	8-729-122-63	2SA1226
Q15	8-729-175-73	2SC2757
Q16	8-729-175-73	2SC2757
Q17	8-729-175-73	2SC2757
Q18	8-729-122-63	2SA1226
Q19	8-729-122-63	2SA1226
Q21	8-729-175-73	2SC2757
Q22	8-729-175-73	2SC2757
Q23	8-729-175-73	2SC2757
Q24	8-729-175-73	2SC2757
Q25	8-729-109-44	2SK94
Q26	8-729-175-73	2SC2757
Q27	8-729-122-63	2SA1226
Q28	8-729-122-63	2SA1226
Q29	8-729-122-63	2SA1226
Q30	8-729-122-63	2SA1226
Q31	8-729-175-73	2SC2757
Q32	8-729-175-73	2SC2757
Q33	8-729-175-73	2SC2757
Q34	8-729-122-63	2SA1226
Q35	8-729-175-73	2SC2757
Q36	8-729-175-73	2SC2757
Q37	8-729-175-73	2SC2757
Q38	8-729-175-73	2SC2757
Q41	8-729-175-73	2SC2757
Q42	8-729-175-73	2SC2757
Q43	8-729-175-73	2SC2757
Q44	8-729-175-73	2SC2757
Q45	8-729-109-44	2SK94
Q46	8-729-175-73	2SC2757
Q47	8-729-122-63	2SA1226
Q48	8-729-122-63	2SA1226
Q49	8-729-122-63	2SA1226
Q50	8-729-122-63	2SA1226
Q51	8-729-175-73	2SC2757
Q52	8-729-175-73	2SC2757
Q53	8-729-175-73	2SC2757
Q54	8-729-122-63	2SA1226
Q55	8-729-175-73	2SC2757
Q56	8-729-175-73	2SC2757
Q57	8-729-175-73	2SC2757
Q58	8-729-175-73	2SC2757
Q60	8-729-122-63	2SA1226
Q61	8-729-175-73	2SC2757
Q62	8-729-175-73	2SC2757
Q63	8-729-175-73	2SC2757
Q64	8-729-175-73	2SC2757
Q65	8-729-175-73	2SC2757
Q66	8-729-175-73	2SC2757
Q67	8-729-175-73	2SC2757
Q68	8-729-175-73	2SC2757
Q69	8-729-175-73	2SC2757

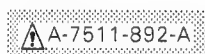
Ref.No.	Parts No.	Description
Q70	8-729-175-73	2SC2757
Q71	8-729-175-73	2SC2757
Q72	8-729-175-73	2SC2757
Q73	8-729-175-73	2SC2757
Q74	8-729-364-12	2SC641K
Q75	8-729-175-73	2SC2757
Q76	8-729-175-73	2SC2757
R25	1-215-830-11	METAL 100K 1% 1/8W
R28	1-215-820-11	METAL 39K 1% 1/8W
R85	1-215-830-11	METAL 100K 1% 1/8W
R155	1-215-830-11	METAL 100K 1% 1/8W
R240	1-215-822-11	METAL 43K 1% 1/8W
RV1	1-228-456-00	CERMET 1K
RV2	1-228-473-00	CERMET 5K
RV3	1-228-472-00	CERMET 2K
RV4	1-228-458-00	CERMET 5K
RV5	1-228-457-00	CERMET 2K
RV6	1-228-474-00	CERMET 10K
RV7	1-228-470-00	CERMET 500
RV8	1-228-471-00	CERMET 1K
RV9	1-228-457-00	CERMET 2K
RV11	1-228-456-00	CERMET 1K
RV12	1-228-473-00	CERMET 5K
RV13	1-228-472-00	CERMET 2K
RV14	1-228-458-00	CERMET 5K
RV15	1-228-457-00	CERMET 2K
RV16	1-228-474-00	CERMET 10K
RV17	1-228-470-00	CERMET 500
RV18	1-228-471-00	CERMET 1K
RV19	1-228-458-00	CERMET 5K
RV20	1-228-461-00	CERMET 50K
RV21	1-228-456-00	CERMET 1K
RV22	1-228-473-00	CERMET 5K
RV23	1-228-472-00	CERMET 2K
RV24	1-228-458-00	CERMET 5K
RV25	1-228-457-00	CERMET 2K
RV26	1-228-474-00	CERMET 10K
RV27	1-228-470-00	CERMET 500
RV28	1-228-471-00	CERMET 1K
RV29	1-228-458-00	CERMET 5K
RV30	1-228-455-00	CERMET 500
RV31	1-228-459-00	CERMET 10K
RV32	1-228-459-00	CERMET 10K
RV33	1-228-458-00	CERMET 5K
RV34	1-228-458-00	CERMET 5K
RV35	1-228-458-00	CERMET 5K
RV36	1-228-458-00	CERMET 5K

PR-75, PW-93

Ref.No.	Parts No.	Description
S1	1-554-076-00	SLIDE
S2	1-554-076-00	SLIDE "MASKING ON/OFF"
S3	1-552-509-00	DIP "R-γ ON/OFF"
S4	1-552-509-00	DIP "G-γ ON/OFF"
S5	1-552-509-00	DIP "B-γ ON/OFF"
S6	1-554-398-00	TOGGLE "R/OFF/B"
S7	1-554-398-00	TOGGLE "G/OFF/-G"
S8	1-554-397-00	TOGGLE "ENC/REG"
S9	1-554-399-00	TOGGLE "KNEE AUT/MAN."

TH1	1-800-946-00	360±5%
TH2	1-800-946-00	360±5%
TH3	1-800-946-00	360±5%

PW-93 BOARD



MOUNTED CIRCUIT BOARD
"PW-93"

C1	1-108-603-00	MYLAR 0.1 5% 50V
C2	1-124-149-00	ELECT 220 20% 25V
C4	1-124-149-00	ELECT 220 20% 25V
C5	1-130-193-00	POLYESTER 0.47 5% 100V
C7	1-130-022-00	CERAMIC 0.0022 5% 50V
C8	1-130-193-00	POLYESTER 0.47 5% 100V
C9	1-131-466-00	TANTALUM 150 20% 16V
C11	1-130-193-00	POLYESTER 0.47 5% 100V
C12	1-131-466-00	TANTALUM 150 20% 16V
C18	1-161-013-00	CERAMIC 0.01 10% 25V
C24	1-131-465-00	TANTALUM 68 20% 16V
C26	1-124-295-00	ELECT 470 20% 25V
C27	1-124-340-00	ELECT 22 20% 200V
C28	1-124-294-00	ELECT 330 20% 25V
C29	1-131-466-00	TANTALUM 150 20% 16V
C30	1-123-384-00	ELECT 10 20% 100V
C31	1-124-341-00	ELECT 1 20% 200V
C32	1-123-384-00	ELECT 10 20% 100V
C33	1-131-561-00	TANTALUM 33 20% 25V
C36	1-108-421-00	MYLAR 0.01 10% 200V
C37	1-123-252-00	ELECT 1 160V
C43	1-123-910-00	ELECT 330 20% 16V
C44	1-123-384-00	ELECT 10 20% 100V
C45	1-106-196-00	MYLAR 0.01 5% 100V
C56	1-125-444-11	DOUBLE LAYERS 0.1F 5.5V

Ref.No.	Parts No.	Description
C58	1-130-193-00	POLYESTER 0.47 5% 100V
C59	1-102-110-00	CERAMIC 220P 10% 50V
C64	1-123-819-00	ELECT 33 25V
C65	1-124-149-00	ELECT 220 20% 25V
C66	1-108-599-00	MYLAR 0.068 5% 50V
C67	1-130-193-00	POLYESTER 0.47 5% 100V
C70	1-131-465-00	TANTALUM 68 20% 16V
C71	1-130-193-00	POLYESTER 0.47 5% 100V

CN1	1-560-935-00	RECEPTACLE, 40P MALE
	1-560-707-00	POLARISING KEY



D3	8-719-815-55	1S1555
D4	8-719-981-00	ERC81-004
D5	8-719-815-55	1S1555
D6	8-719-815-55	1S1555
D7	8-719-981-00	ERC81-004

D10	8-719-100-38	RD6.2EB2
D12	8-719-100-48	RD8.2EB2
D16	8-719-815-55	1S1555
D17	8-719-300-76	RH1A
D18	8-719-982-04	ERB81-004

D19	8-719-982-04	ERB81-004
D20	8-719-300-76	RH1A
D21	8-719-300-76	RH1A
D22	8-719-300-76	RH1A
D23	8-719-300-76	RH1A

D24	8-719-982-04	ERB81-004
D25	8-719-982-04	ERB81-004
D26	8-719-982-04	ERB81-004
D27	8-719-911-55	UO5G
D28	8-719-981-01	ERA81-004

D29	8-719-981-01	ERA81-004
D31	8-719-100-38	RD6.2EB2
D32	8-719-100-38	RD6.2EB2
D33	8-719-100-38	RD6.2EB2
D36	8-719-931-08	EQB01-08

Ref.No.	Parts No.	Description	Ref.No.	Parts No.	Description
IC1	8-759-900-64	TL064CN: TI	R75	1-217-643-00	WIREWOUND 10 1% 1/2W
IC2	8-759-904-94	TL494CN: TI	R76	1-215-503-00	METAL 12K 1/4W
IC3	8-759-904-94	TL494CN: TI	R79	1-217-643-00	WIREWOUND 10 1% 1/2W
IC4	8-759-101-54	μ PC454D: NEC	R80	1-217-643-00	WIREWOUND 10 1% 1/2W
IC5	8-759-900-64	TL064CN: TI	R81	1-217-643-00	WIREWOUND 10 1% 1/2W
IC6	8-759-278-07	TA78L007AP: TOSHIBA	R82	1-215-502-00	METAL 100 1/4W
IC7	8-759-278-15	TA78L015AP: TOSHIBA	R85	1-217-643-00	WIREWOUND 10 1% 1/2W
IC8	8-759-101-54	μ PC454D: NEC	R86	1-217-643-00	WIREWOUND 10 1% 1/2W
IC9	8-759-990-62	TL062CP: TI	R87	1-217-643-00	WIREWOUND 10 1% 1/2W
 IC11	8-759-905-80	AD580M: ANALOG DEVICES	RV1	1-228-456-00	METAL 1K
L1	1-408-142-21	22.5	 RV2	1-228-456-00	METAL 1K
L2	1-408-549-00	150	RV3	1-228-455-00	METAL 500
L3	1-408-549-00	150	RV4	1-228-454-00	METAL 200
L4	1-421-013-00	HORIZONTAL CHOKE 25	RV5	1-230-097-00	METAL 100
L5	1-421-013-00	HORIZONTAL CHOKE 25	RV6	1-228-457-00	METAL 2K
L6	1-408-142-21	22.5	RV7	1-230-097-00	METAL 100
L9	1-421-013-00	HORIZONTAL CHOKE 25	RV9	1-230-097-00	METAL 100
Q1	8-729-113-33	2SB733	T1	1-447-475-00	DC-DC CONVERTER
Q2	8-729-113-33	2SB733			
Q3	8-729-113-33	2SB733			
Q4	8-729-113-33	2SB733			
Q5	8-729-177-33	2SD773			
Q6	8-729-113-33	2SB733			
Q7	8-729-177-33	2SD773			
Q9	8-729-364-12	2SC641K			
Q10	8-729-810-62	2SD1061			
Q11	8-729-810-62	2SD1061			
Q12	8-729-255-12	2SC2551			
Q13	8-729-255-12	2SC2551			
Q15	8-729-178-54	2SC2785			
Q16	8-729-117-54	2SA1175			
Q17	8-729-113-33	2SB733			
Q18	8-729-113-33	2SB733			
Q19	8-729-113-33	2SB733			
Q20	8-729-178-54	2SC2785			
R10	1-246-462-00	CARBON 360 5% 1/4W			
R15	1-217-612-00	WIREWOUND 0.1 2W			
R26	1-202-561-00	CARBON 330 5% 1/2W			
R56	1-215-459-00	METAL 39K 1% 1/6W			
R57	1-215-469-00	METAL 100K 1% 1/6W			
R63	1-215-462-00	METAL 51K 1% 1/6W			
R64	1-214-954-00	METAL 390K 1% 1/4W			
R70	1-215-496-00	METAL 3.3K 1/4W			
R73	1-217-643-00	WIREWOUND 10 1% 1/2W			
R74	1-217-643-00	WIREWOUND 10 1% 1/2W			

SG-63A

Ref. No.	Parts No.	Description	Ref. No.	Parts No.	Description
SG-63A BOARD			L7	1-408-150-00	MICRO 22
			L8	1-408-150-00	MICRO 22
	A-7511-913-B	MOUNTED CIRCUIT BOARD	L11	1-408-147-00	MICRO 2.2
		"SG-63A"	L13	1-408-151-00	MICRO 47
C4	1-107-075-00	MICA 39PF 5% 50V	Q1	8-729-122-63	2SA1226
C19	1-163-243-00	CERAMIC CHIP 47PF 5%	Q2	8-729-101-25	2SC1009A
C27	1-163-141-00	CERAMIC CHIP 0.001 5% 50V	Q3	8-729-101-25	2SC1009A
C28	1-163-141-00	CERAMIC CHIP 0.001 5% 50V	Q4	8-729-101-25	2SC1009A
C33	1-163-233-00	CERAMIC CHIP 18PF 5%	Q6	8-729-364-12	2SC641K
C34	1-124-169-00	ELECT 100 20% 10V	Q7	8-729-101-25	2SC1009A
C35	1-107-075-00	MICA 39PF 5% 50V	Q8	8-729-122-63	2SA1226
C36	1-107-075-00	MICA 39PF 5% 50V	Q9	8-729-101-25	2SC1009A
C42	1-163-255-00	CERAMIC CHIP 150PF 5%	Q10	8-729-364-12	2SC641K
C49	1-130-483-00	MYLAR 0.01 5% 50V	Q11	8-723-305-00	2SK43-5
C51	1-161-009-00	CERAMIC 0.0047 10% 25V	Q14	8-729-122-63	2SA1226
CN1	1-564-083-00	RECEPTACLE, 40P MALE	RV1	1-228-460-00	METAL 20K
	1-556-763-00	40P PLUG WITH HARNESS	RV2	1-228-460-00	METAL 20K
CN2	1-561-724-00	SOKET, CONNECTOR	RV3	1-228-459-00	METAL 10K
	1-560-690-00	PLUG, SHORT 4P	RV4	1-228-461-00	METAL 50K
CN3	1-561-724-00	SOKET, CONNECTOR			
	1-560-690-00	PLUG, SHORT 4P			
CN4	1-561-724-00	SOKET, CONNECTOR	S1	1-554-076-00	SLIDE
			S2	1-554-076-00	SLIDE
D1	8-719-100-03	1S2835	S3	1-553-925-00	ROTARY
D2	8-719-100-03	1S2835	S4	1-554-076-00	SLIDE
D3	8-719-101-23	1S5123			
D5	8-719-100-05	1S2837	X1	1-567-112-00	17.734475MHz
			X2	1-567-086-00	14.1875MHz
IC1	8-759-240-53	TC4053BP: TOSHIBA			
IC2	8-759-900-86	SN74LS86N: TI			
IC3	8-759-901-23	SN74LS123N: TI			
IC4	8-759-990-62	TL062CP: TI			
IC5	8-759-200-81	TC4053BF: TOSHIBA			
IC6	8-759-200-79	TC4049BF: TOSHIBA			
IC7	8-759-906-53	TL062CPS: TI			
IC8	8-759-200-81	TC4053BF: TOSHIBA			
IC9	8-757-731-00	CX773A: SONY			
IC10	8-759-907-21	CX7969: SONY			
IC11	8-759-200-80	TC4050BF: TOSHIBA			
IC12	8-749-910-40	BX1040: SONY			
IC13	8-759-101-12	μPC311G2: NEC			
IC14	8-757-903-00	CX7903: SONY			
IC15	8-759-902-21	SN74LS221N: TI			

Ref.No.	Parts No.	Description	Ref.No.	Parts No.	Description
SH-8A BOARD					
	A-7513-064-A	MOUNTED CIRCUIT BOARD "SH-8A"	Q1	8-723-305-00	2SK43-5
			Q2	8-723-305-00	2SK43-5
			Q3	8-723-305-00	2SK43-5
			Q4	8-729-101-25	2SC1009A
			Q5	8-729-101-25	2SC1009A
C16	1-130-192-00	POLYESTER 0.22 5% 100V	Q6	8-729-122-63	2SA1226
C24	1-163-231-00	CERAMIC CHIP 15PF 5% 50V	Q7	8-729-122-63	2SA1226
C25	1-163-231-00	CERAMIC CHIP 15PF 5% 50V	Q8	8-729-122-63	2SA1226
C26	1-163-231-00	CERAMIC CHIP 15PF 5% 50V	Q9	8-723-305-00	2SK43-5
C28	1-163-251-00	CERAMIC CHIP 100PF 5% 50V	Q10	8-723-305-00	2SK43-5
C41	1-131-361-00	TANTALUM 2.2 10% 20V	Q11	8-723-305-00	2SK43-5
C42	1-131-361-00	TANTALUM 2.2 10% 20V	Q12	8-729-101-25	2SC1009A
C43	1-163-141-00	CERAMIC CHIP 0.001 5% 50V	Q14	8-729-122-63	2SA1226
C49	1-124-287-00	ELECT (NONPOLAR) 10 20% 10V	Q15	8-729-101-25	2SC1009A
C50	1-163-267-00	CERAMIC CHIP 470P 5% 50V	Q16	8-729-122-63	2SA1226
C51	1-163-141-00	CERAMIC CHIP 0.001 5% 50V	Q17	8-729-101-25	2SC1009A
C52	1-163-141-00	CERAMIC CHIP 0.001 5% 50V	Q18	8-729-101-25	2SC1009A
C53	1-163-141-00	CERAMIC CHIP 0.001 5% 50V	Q19	8-729-122-63	2SA1226
			Q22	8-729-101-25	2SC1009A
			Q23	8-729-101-25	2SC1009A
CN1	1-560-675-00	RECEPTACLE, 50P MALE	Q24	8-729-101-25	2SC1009A
	1-556-764-00	50P PLUG WITH HARNESS	Q25	8-729-101-25	2SC1009A
CN2	1-564-151-00	RECEPTACLE, 8P MALE	Q26	8-729-122-63	2SA1226
	1-561-176-00	PLUG, HOUSING 8P	Q27	8-729-101-25	2SC1009A
	1-560-768-00	PLUG, CONTACT			
	1-508-944-00	INDEX PIN			
CN3	1-564-152-00	RECEPTACLE, 10P MALE	R4	1-246-441-00	CARBON 47 5% 1/4W
	1-561-177-00	PLUG, HOUSING 10P	R90	1-215-462-00	METAL 51K 1% 1/6W
	1-560-768-00	PLUG, CONTACT	R92	1-215-462-00	METAL 51K 1% 1/6W
	1-508-944-00	INDEX PIN	R95	1-215-473-00	METAL 150K 1% 1/6W
CN4	1-564-159-00	RECEPTACLE, 7P MALE			
	1-933-834-00	PLUG 7P WITH HARNESS			
D1	8-719-100-05	1S2837	RV1	1-228-462-00	METAL 100K
D2	8-719-100-03	1S2835	RV2	1-228-462-00	METAL 100K
D4	8-719-100-05	1S2837	RV3	1-228-462-00	METAL 100K
D5	8-719-100-05	1S2837	RV4	1-228-462-00	METAL 100K
D6	8-719-100-05	1S2837	RV5	1-228-462-00	METAL 100K
D7	8-719-105-32	RD2.7MB2			
D8	8-719-100-05	1S2837			
D10	8-719-100-03	1S2835			
D11	8-719-100-03	1S2835			
D12	8-719-100-03	1S2835			
D13	8-719-100-03	1S2835			
IC1	8-759-906-54	TL064CNS: TI			
IC2	8-759-906-54	TL064CNS: TI			
IC3	8-759-906-54	TL064CNS: TI			
IC4	8-759-200-90	TC4538BF: TOSHIBA			
IC5	8-759-906-54	TL064CNS: TI			
IC7	8-759-200-81	TC4053BF: TOSHIBA			
IC8	8-759-906-54	TL064CNS: TI			
IC9	8-759-200-99	TC4051BF: TOSHIBA			

SH-8A, DUS-122, SW-77, SW-78

Ref.No.	Parts No.	Description
RV6	1-228-462-00	METAL 100K
RV7	1-228-462-00	METAL 100K
RV8	1-228-462-00	METAL 100K
RV9	1-228-462-00	METAL 100K
RV10	1-228-462-00	METAL 100K
RV11	1-228-462-00	METAL 100K
RV12	1-228-462-00	METAL 100K
RV13	1-228-463-00	METAL 200K
RV14	1-228-463-00	METAL 200K
RV15	1-228-463-00	METAL 200K
RV16	1-228-463-00	METAL 200K
RV17	1-228-462-00	METAL 100K
RV18	1-228-462-00	METAL 100K
RV19	1-228-462-00	METAL 100K
RV20	1-228-459-00	METAL 10K
RV21	1-228-463-00	METAL 200K
RV22	1-228-463-00	METAL 200K
RV23	1-228-463-00	METAL 200K
RV24	1-228-463-00	METAL 200K
RV25	1-228-463-00	METAL 200K
RV26	1-228-463-00	METAL 200K
RV27	1-228-462-00	METAL 100K
RV28	1-228-462-00	METAL 100K
RV29	1-228-462-00	METAL 100K
RV30	1-228-462-00	METAL 100K
RV31	1-228-452-00	METAL 50
RV32	1-228-462-00	METAL 100K
RV33	1-228-462-00	METAL 100K
RV34	1-228-462-00	METAL 100K
RV35	1-228-462-00	METAL 100K
RV36	1-228-459-00	METAL 10K
S1	1-552-509-00	SLIDE
S2	1-552-509-00	SLIDE

Ref.No.	Parts No.	Description
SW-77 BOARD		
	A-7520-131-A	MOUNTED CIRCUIT BOARD "SW-77"
CN1	1-564-172-00 1-933-834-00	RECEPTACLE, 7P MALE PLUG 7P WITH HARNESS
S1	1-554-396-00	TOGGLE "AUTO CENT"
S2	1-554-395-00	TOGGLE "AUTO W/B BAL"

SW-78 BOARD		
<div>S/N UP TO 50065 BVP-30(J) UP TO 16415 BVP-3A(J) S/N UP TO 60510 BVP-30(UQ) UP TO 42020 BVP-3A(UQ) S/N UP TO 10160 BVP-30AP(EK) UP TO 10106 BVP-3AN(J) UP TO 22710 BVP-3AP(EK) UP TO 30110 BVP-3AS(AE)</div>		
	A-7511-886-A	MOUNTED CIRCUIT BOARD "SW-78"
D1	8-179-191-07	RD9.1EB
D2	8-719-815-85	1S1585
D3	8-719-815-85	1S1585
D4	8-719-815-85	1S1585

S1	1-554-356-00	TOGGLE "CAMERA/VTR"
S2	1-554-400-00	TOGGLE "GAIN"
S3	1-554-355-00	TOGGLE "OUTPUT"
S4	1-554-355-00	TOGGLE "WHITE BAL"

DUS-122 BOARD

All of the component parts on the DUS-122 board are supplied together when you order SH-8A board

1-619-130-11 PC. BOARD DUS-122

RV1	1-228-461-00	CERMET 50K
RV2	1-228-461-00	CERMET 50K

Ref.No. Parts No. Description

SW-207 BOARD

S/N 50066 AND HIGHER BVP-30(J)
16416 AND HIGHER BVP-3A(J)
S/N 60511 AND HIGHER BVP-30(UC)
42021 AND HIGHER BVP-3A(UC)
S/N 10161 AND HIGHER BVP-30AP(EK)
22711 AND HIGHER BVP-3AP(EK)
30111 AND HIGHER BVP-3AS(AE)

1-621-164-11 PC BOARD, SW-207

CN1 1-506-467-11 PIN, CONNECTOR 2P

D1 8-719-100-54 RD9.1EB1
D2 8-719-100-55 1S1555
D3 8-719-100-55 1S1555
D4 8-719-100-55 1S1555

R1 1-215-433-00 METAL 3.3K 1% 1/6W
R2 1-215-445-00 METAL 10K 1% 1/6W
R3 1-215-445-00 METAL 10K 1% 1/6W
R4 1-215-457-00 METAL 33K 1% 1/6W
R5 1-215-467-00 METAL 82K 1% 1/6W
R6 1-215-471-00 METAL 120K 1% 1/6W

S1 1-554-356-00 SWITCH, TOGGLE
S2 1-554-400-00 SWITCH, TOGGLE
S3 1-570-911-11 SWITCH, TOGGLE
S4 1-554-355-00 SWITCH, TOGGLE

SW-79 BOARD

A-7520-132-A MOUNTED CIRCUIT BOARD
"SW-79"

S1 1-553-739-00 PUSH "VTR"

Ref.No. Parts No. Description

VA-14 BOARD

A-7511-887-A MOUNTED CIRCUIT BOARD
"VA-14"

C6 1-124-290-00 ELECT(NONPOLAR) 47 20% 10V
C7 1-124-271-00 ELECT(NONPOLAR) 1 20% 50V
C12 1-124-139-00 ELECT 100 20% 10V
C23 1-124-290-00 ELECT(NONPOLAR) 47 20% 10V
C24 1-124-271-00 ELECT(NONPOLAR) 1 20% 50V

C28 1-124-139-00 ELECT 100 20% 10V
C33 1-131-368-00 TANTALUM 3.3 10% 16V
C42 1-124-290-00 ELECT(NONPOLAR) 47 20% 10V
C43 1-124-271-00 ELECT(NONPOLAR) 1 20% 50V
C46 1-124-139-00 ELECT 100 20% 10V

C56 1-123-380-00 ELECT 1 20% 100V
C57 1-123-383-00 ELECT 4.7 20% 100V
C60 1-123-332-00 ELECT 47 20% 25V
C61 1-123-380-00 ELECT 1 20% 100V
C66 1-123-380-00 ELECT 1 20% 100V

C71 1-123-380-00 ELECT 1 20% 100V
C75 1-123-379-00 ELECT 0.47 20% 100V
C76 1-123-379-00 ELECT 0.47 20% 100V
C79 1-123-352-00 ELECT 1M 20% 100V
C82 1-108-555-00 MYLAR 0.001 5% 50V

C83 1-106-172-00 MYLAR 0.001 5% 100V
C92 1-101-881-00 CERAMIC 47PF 10% 50V
C93 1-101-881-00 CERAMIC 47PF 10% 50V
C94 1-101-881-00 CERAMIC 47PF 10% 50V
C96 1-161-005-00 CERAMIC 0.0022 10% 25V

C97 1-161-013-00 CERAMIC 0.01 10% 25V
C98 1-161-013-00 CERAMIC 0.01 10% 25V
C99 1-161-013-00 CERAMIC 0.01 10% 25V
C100 1-161-013-00 CERAMIC 0.01 10% 25V
C101 1-163-083-00 CERAMIC CHIP 1PF

C102 1-163-083-00 CERAMIC CHIP 1PF
C103 1-163-083-00 CERAMIC CHIP 1PF

CN1 1-560-935-00 RECEPTACLE 40P MALE
1-560-707-00 POLARISING KEY

CV1 1-141-206-00 TRIMMER 45PF
CV2 1-141-206-00 TRIMMER 45PF
CV3 1-141-206-00 TRIMMER 45PF

Ref.No.	Parts No.	Description
D1	8-719-815-59	1S1555S
D2	8-719-815-59	1S1555S
D3	8-719-815-59	1S1555S
D4	8-719-815-85	1S1585
D5	8-719-815-55	1S1555
D6	8-719-815-55	1S1555
D7	8-719-815-55	1S1555
D8	8-719-815-55	1S1555
D9	8-719-815-85	1S1585
D10	8-719-815-55	1S1555
D11	8-719-815-85	1S1585
D12	8-719-815-55	1S1555
D13	8-719-815-55	1S1555
D14	8-719-815-55	1S1555
D15	8-719-815-55	1S1555
D16	8-719-815-55	1S1555
D17	8-719-815-55	1S1555
D18	8-719-815-59	1S1555-S
IC1	8-749-910-55	BX1055: SONY
IC2	8-749-910-82	BX1082: SONY
IC3	8-759-907-92	μ A796HCA: FSC
IC4	8-749-910-55	BX1055: SONY
IC5	8-749-910-82	BX1082: SONY
IC6	8-759-907-92	μ A796HCA: FSC
IC7	8-749-910-55	BX1055: SONY
IC8	8-749-910-82	BX1082: SONY
IC9	8-759-907-92	μ A796HCA: FSC
IC10	8-741-111-60	BX1116: SONY
IC11	8-741-111-60	BX1116: SONY
IC12	8-741-111-60	BX1116: SONY
IC13	8-759-240-11	TC4011BP: TOSHIBA
Q1	8-729-117-54	2SA1175
Q2	8-729-117-54	2SA1175
Q3	8-765-450-20	2SK125-2
Q4	8-729-178-54	2SC2785
Q5	8-765-450-20	2SK125-2
Q6	8-765-450-20	2SK125-2
Q7	8-765-450-20	2SK125-2
Q8	8-729-178-54	2SC2785
Q9	8-729-178-54	2SC2785
Q10	8-729-178-54	2SC2785
Q11	8-729-110-53	2SA1005
Q12	8-729-201-84	2SC3112B
Q13	8-729-178-54	2SC2785
Q14	8-729-117-54	2SA1175
Q15	8-729-117-54	2SA1175

Ref.No.	Parts No.	Description
Q16	8-729-117-54	2SA1175
Q17	8-765-450-20	2SK125-2
Q18	8-729-178-54	2SC2785
Q19	8-765-450-20	2SK125-2
Q20	8-765-450-20	2SK125-2
Q21	8-765-450-20	2SK125-2
Q22	8-765-163-00	2SK152-3
Q23	8-729-178-73	2SC2787K
Q24	8-729-178-73	2SC2787K
Q25	8-729-178-73	2SC2787K
Q26	8-729-110-53	2SA1005
Q27	8-729-201-84	2SC3112B
Q28	8-729-178-54	2SC2785
Q29	8-729-117-54	2SA1175
Q30	8-729-117-54	2SA1175
Q31	8-729-117-54	2SA1175
Q32	8-729-117-54	2SA1175
Q33	8-765-450-20	2SK125-2
Q34	8-729-178-54	2SC2785
Q35	8-765-450-20	2SK125-2
Q36	8-765-450-20	2SK125-2
Q37	8-765-450-20	2SK125-2
Q38	8-729-178-54	2SC2785
Q39	8-729-178-54	2SC2785
Q40	8-729-178-54	2SC2785
Q41	8-729-110-53	2SA1005
Q42	8-729-201-84	2SC3112B
Q43	8-729-178-54	2SC2785
Q44	8-729-117-54	2SA1175
Q45	8-729-110-53	2SA1005
Q46	8-729-117-54	2SA1175
Q47	8-729-117-54	2SA1175
Q48	8-729-110-53	2SA1005
Q49	8-729-178-54	2SC2785
Q50	8-729-117-54	2SA1175
Q51	8-729-117-54	2SA1175
Q52	8-729-117-54	2SA1175
Q53	8-729-117-54	2SA1175
Q54	8-729-117-54	2SA1175
Q55	8-729-178-54	2SC2785
Q56	8-729-110-53	2SA1005
Q57	8-729-200-17	2SA1091
Q58	8-729-178-54	2SC2785

VA-14, CAMERA FRAME, LP-28

Ref.No.	Parts No.	Description
R166	1-215-819-11	METAL 36K 1% 1/8W
R168	1-215-819-11	METAL 36K 1% 1/8W
R188	1-215-822-11	METAL 47K 1% 1/8W
R196	1-215-822-11	METAL 47K 1% 1/8W
R205	1-215-830-11	METAL 100K 1% 1/8W
R207	1-215-822-11	METAL 150K 1% 1/8W
R208	1-215-477-00	METAL 220K 1% 1/6W
R237	1-215-452-00	METAL 20K 1% 1/6W
R238	1-215-452-00	METAL 20K 1% 1/6W
R239	1-215-452-00	METAL 20K 1% 1/6W
R305	1-215-458-00	METAL 36K 1% 1/6W
R306	1-215-458-00	METAL 36K 1% 1/6W
RV1	1-228-472-00	METAL 2K
RV2	1-228-472-00	METAL 2K
RV3	1-228-472-00	METAL 2K
RV5	1-228-459-00	METAL 10K
RV6	1-228-460-00	METAL 20K
RV7	1-228-475-00	METAL 20K
RV8	1-228-461-00	METAL 50K
RV9	1-228-461-00	METAL 50K
RV11	1-228-459-00	METAL 10K
RV12	1-228-460-00	METAL 20K
RV13	1-228-475-00	METAL 20K
RV14	1-228-461-00	METAL 50K
RV15	1-228-461-00	METAL 50K
RV17	1-228-459-00	METAL 10K
RV18	1-228-460-00	METAL 20K
RV19	1-228-475-00	METAL 20K
RV20	1-228-461-00	METAL 50K
RV21	1-228-461-00	METAL 50K
RV22	1-228-454-00	METAL 200
RV23	1-228-454-00	METAL 200
RV24	1-228-454-00	METAL 200
RV26	1-228-459-00	METAL 10K
RV32	1-228-455-00	METAL 500
RV33	1-228-455-00	METAL 500
RV34	1-228-455-00	METAL 500
RV35	1-228-458-00	METAL 5K
RV36	1-228-460-00	RES, ADJ, CERMET 20K
S1	1-552-509-00	SLIDE




Ref.No.	Parts No.	Description
CAMERA FRAME		
	1-933-830-00	PICKUP TUBE SOCKET WITH HARNESS (R)
	1-933-831-00	PICKUP TUBE SOCKET WITH HARNESS (G)
	1-933-832-00	PICKUP TUBE SOCKET WITH HARNESS (B)
CN101	1-934-868-11	VF 20P CONNECTOR WITH HARNESS
	1-561-812-00	RECEPTACLE, 20P FEMALE "VF"
CN102	1-934-795-11	CCU-15 CONNECTOR WITH HARNESS
CN103	1-561-233-21	RECEPTACLE, 6P FEMALE "LENS"
CN104	1-562-221-21	RECEPTACLE, 12P FEMALE "VF"

VIEW FINDER


LP-28 BOARD


	A-7513-066-A	MOUNTED CIRCUIT BOARD "LP-28"
CN1	1-564-005-00	RECEPTACLE, 6P MALE
	1-562-151-11	PLUG HOUSING 6P
	1-564-026-00	PLUG CONTACT
CN2	1-564-006-11	RECEPTACLE, 7P MALE
	1-562-152-11	PLUG HOUSING 7P
	1-564-026-00	PLUG CONTACT
D1	8-719-812-43	TLG124A "FILTER/AUDIO 1"
D2	8-719-812-43	TLG124A "FILTER/AUDIO 2"
D3	8-719-812-43	TLG124A "FILTER/AUDIO 3"
D4	8-719-812-43	TLG124A "FILTER/AUDIO 4"
D5	8-719-812-41	TLR124 "FILTER/AUDIO 5"
D6	8-719-812-44	TLO124 "GAIN UP"
D7	8-719-812-43	TLG124A "W/B CENT"
D8	8-719-900-92	GL9PR20 "BATT"
D9	8-719-900-92	GL9PR20 "REC"
D10	8-719-909-20	GL9NG2 "10M"
D11	8-719-909-20	GL9NG2 "5M"

MC-19, SW-80, VF-22

Ref.No.	Parts No.	Description	Ref.No.	Parts No.	Description
MC-19 BOARD			C21	1-163-991-11	CERAMIC CHIP 0.0022 10% 50V
	1-606-127-00	PRINTED CIRCUIT BOARD "MC-19"	C22	1-123-384-00	ELECT 10 20% 100V
			C23	1-162-870-11	CERAMIC CHIP 0.0022 10% 1KV
			C24	1-130-815-00	FILM 0.015 5% 630V
			C27	1-124-168-00	ELECT 100 20% 16V
CN1	1-561-816-00	RECEPTACLE, 6P FEMALE	C29	1-131-361-00	TANTALUM 2.2 10% 16V
			C33	1-130-487-00	MYLAR 0.022 5% 50V
			C37	1-130-481-00	MYLAR 0.0068 5% 50V
			C38	1-130-477-00	MYLAR 0.0033 5% 50V
			C44	1-130-479-00	MYLAR 0.0047 5% 50V
			C49	1-124-168-00	ELECT 100 20% 16V
			C50	1-123-296-00	ELECT 220 20% 6.3V
			C53	1-163-991-11	CERAMIC CHIP 0.0022 10% 50V
			C55	1-106-188-00	MYLAR 0.0047 5% 100V
			C59	1-131-368-00	TANTALUM 3.3 10% 16V
SW-80 BOARD			CN1	1-564-004-00	RECEPTACLE, 5P MALE
	1-612-778-11	PRINTED CIRCUIT BOARD "SW-80"		1-562-150-11	PLUG HOUSING 5P
				1-564-026-00	PLUG CONTACT
D1	8-719-101-98	1SS97	CN2	1-564-002-00	RECEPTACLE, 3P MALE
D2	8-719-815-55	1S1555		1-562-148-11	PLUG HOUSING 3P
				1-564-026-00	PLUG CONTACT
			CN3	1-564-003-00	RECEPTACLE, 4P MALE
				1-562-149-11	PLUG HOUSING 4P
				1-564-026-00	PLUG CONTACT
S101	1-554-922-11	TOGGLE "TALLY/ZEBRA"	CN4	1-564-002-00	RECEPTACLE, 3P MALE
				1-562-148-11	PLUG HOUSING 3P
				1-564-026-00	PLUG CONTACT
			CN5	1-564-006-11	RECEPTACLE, 7P MALE
				1-562-152-11	PLUG HOUSING 7P
				1-564-026-00	PLUG CONTACT
			CN6	1-564-009-00	RECEPTACLE, 10P MALE
				1-562-155-11	PLUG HOUSING 10P
				1-564-026-00	PLUG CONTACT
			CN7	1-564-001-11	RECEPTACLE, 2P MALE
				1-562-147-11	PLUG HOUSING 2P
				1-564-026-00	PLUG CONTACT
			CN8	1-564-002-00	RECEPTACLE, 3P MALE
				1-562-148-11	PLUG HOUSING 3P
				1-564-026-00	PLUG CONTACT
VF-22 BOARD			D1	8-719-815-55	1S1555
	 A-7513-067-A	MOUNTED CIRCUIT BOARD "VF-22"	D2	8-719-815-55	1S1555
			D3	8-719-101-23	1SS123
C10	1-163-259-00	CERAMIC CHIP 220PF 5% 50V	D4	8-719-100-05	1S2837
C13	1-163-243-00	CERAMIC CHIP 47PF 5% 50V	D5	8-719-101-23	1SS123
C15	1-106-192-00	MYLAR 0.0068 5% 100V			
 C18	1-136-287-11	POLYESTER 0.0047 5% 100V	D7	8-719-900-93	V09C
			D8	8-719-901-19	V11N
			D10	8-719-900-93	V09C
			D11	8-719-901-19	V11N
			D12	8-719-815-55	1S1555
			D13	8-719-101-23	1SS123
			D14	8-719-800-76	1SS226
C19 IS SELECTABLE PARTS FOR ADJUSTMENT (REFER TO Flyback Pulse Width Adjustment)					
 C19	1-136-287-11	POLYESTER 0.0047 5% 100V			
	1-136-288-11	POLYESTER 0.0051 5% 100V			
	1-136-289-11	POLYESTER 0.0056 5% 100V			
	1-136-290-11	POLYESTER 0.0062 5% 100V			
	1-136-291-11	POLYESTER 0.0068 5% 100V			
	1-136-292-11	POLYESTER 0.0075 5% 100V			
	1-136-293-11	POLYESTER 0.0082 5% 100V			
	1-136-306-11	POLYESTER 0.0039 5% 100V			
	1-136-307-11	POLYESTER 0.0043 5% 100V			

VF-22, VIEWFINDER FRAME

Ref.No.	Parts No.	Description
 IC1	8-759-300-28	HA11423MP: HITACHI
IC2	8-759-801-06	LB1423N: SANYO
L1	1-408-406-00	MICRO 5.6
L2	1-408-406-00	MICRO 5.6
L3	1-459-394-00	HORIZONTAL LINEARITY
L4	1-408-080-00	MICRO 100
Q1	8-729-100-66	2SC1623
Q2	8-729-100-66	2SC1623
Q3	8-729-100-66	2SC1623
Q4	8-729-100-76	2SA812
Q5	8-729-100-76	2SA812
Q6	8-729-109-44	2SK94
Q7	8-729-100-76	2SA812
Q8	8-729-800-32	2SC2362K
Q9	8-729-175-73	2SC2757
Q10	8-729-800-32	2SC2362K
Q11	8-729-800-28	2SA1016K
Q12	8-729-102-62	2SC1623
Q13	8-727-587-28	2SC756-872
Q14	8-729-901-27	DTC144WK
Q15	8-729-901-27	DTC144WK
Q17	8-729-901-27	DTC144WK
Q18	8-729-901-27	DTC144WK
Q19	8-729-102-62	2SC1623
Q20	8-729-102-62	2SC1623
Q21	8-729-102-62	2SC1623
Q22	8-729-100-76	2SA812
Q23	8-729-100-76	2SA812
Q24	8-729-216-32	2SA1163
Q25	8-729-216-32	2SA1163
R33	1-215-487-11	METAL 560K 1% 1/6W
R85	1-215-490-00	METAL 750K 1% 1/6W
R86	1-215-479-00	METAL 270K 1% 1/6W
R97	1-215-493-00	METAL 1M 1% 1/6W

Ref.No.	Parts No.	Description
 RV1	1-228-452-00	METAL 50
RV2	1-228-466-00	METAL 2M
RV3	1-228-466-00	METAL 2M
RV4	1-228-458-00	METAL 5K
RV5	1-228-458-00	METAL 5K
RV6	1-228-455-00	METAL 500
RV7	1-228-458-00	METAL 5K
RV8	1-228-454-00	METAL 200
RV9	1-228-464-00	METAL 500K
RV10	1-228-463-00	METAL 200K
RV11	1-228-461-00	METAL 50K

S1 1-554-371-00 PUSH

T1 1-446-106-00 HEATER PULS

 T2 1-439-225-21 FLYBACK

VIEWFINDER FRAME

1-451-208-21 DEFLECTION YOKE

 1-464-168-22 MULTIPLIER

 1-546-043-11 PICTURE TUBE 1 1/2-INCH,
40LB4

1-934-936-11 CRT SOCKET WITH HARNESS

CN101 1-560-704-00 RECEPTACLE, 20P MALE

MIC1 8-814-163-00 MICROPHONE, C-20 02A

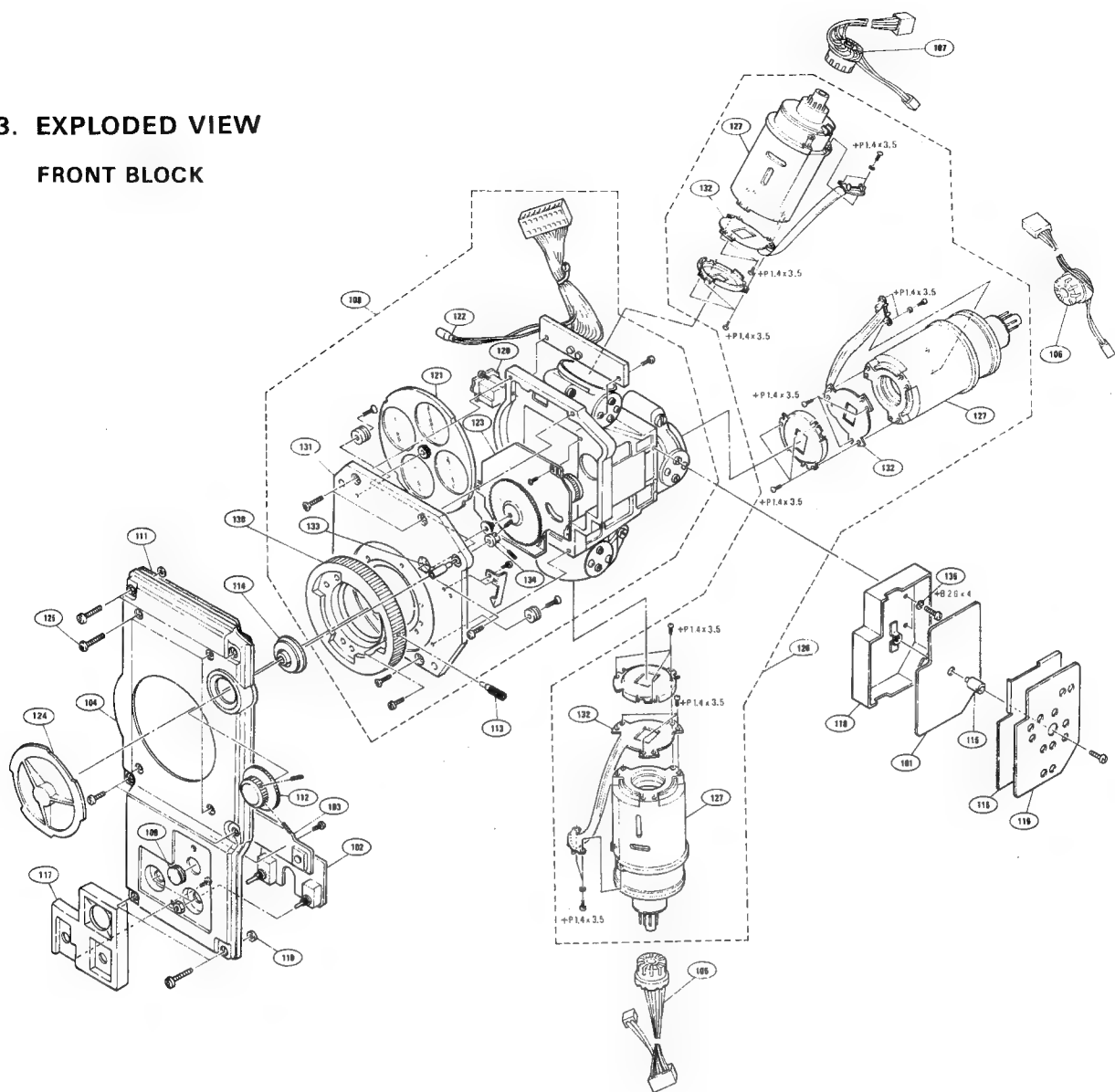
PL101 1-518-337-00 LAMP, TALLY 12V 60mA
1-517-077-00 HOLDER, LAMP

RV101 1-226-735-00 CARBON 2K "CONTR"
RV102 1-226-736-00 CARBON 250K "BRIGHT"
RV103 1-230-489-11 CARBON 20K "AUDIO"

S102 1-554-924-11 TOGGLE "AUDIO/FILTER"

FRONT BLOCK

7-3. EXPLODED VIEW
FRONT BLOCK



No.	Parts No.	Description	No.	Parts No.	Description
101	A-7513-057-A	MOUNTED CIRCUIT BOARD "PA-37"	120	3-706-975-01	HOUSING, BIAS LIGHT
102	A-7520-131-A	MOUNTED CIRCUIT BOARD "SW-77"	121	3-706-758-00	DISC, FILTER
103	A-7520-132-A	MOUNTED CIRCUIT BOARD "SW-79"	122	3-706-759-00	LAMP, BIAS LIGHT
104	X-3678-608-4	PANEL ASSY, FRONT	123	3-706-760-00	SHUTTER
105	1-933-830-00	PICKUP TUBE SOCKET WITH HARNESS (R)	124	3-706-761-00	CAP
106	1-933-831-00	PICKUP TUBE SOCKET WITH HARNESS (G)	125	4-882-768-02	SCREW, BUTTON HEAD (M4x8)
107	1-933-832-00	PICKUP TUBE SOCKET WITH HARNESS (B)	126	OPTIONAL PART: PICKUP TUBE KIT (RGB) RKP2322AX	
108	1-547-133-21	OPTICAL BLOCK (PY-08)	127	OPTIONAL PART: PICKUP TUBE (ALMIGHTY) RKP2322AW	
109	3-672-221-00	PACKING, CONTROL	130	3-707-031-01	RING, MOUNT
110	3-672-251-00	RING (M4), O	131	3-707-187-01	PANEL FRONT
111	3-672-253-11	RUBBER, CONDUCTIVE	132	1-608-774-14	PRINTED CIRCUIT BOARD "PP-10"
112	3-678-602-00	KNOB, FILTER	133	3-707-274-01	SHAFT
113	3-678-629-00	LEVER, MOUNT	134	3-707-275-01	GEAR, FLAT
114	3-678-632-00	PACKING, KNOB	135	7-623-421-07	LW2.6, TYPE B
115	3-678-680-00	SCREW, PA			
116	3-678-682-00	LID, SHIELD, PA			
117	3-680-567-01	GUARD, SWITCH			
118	3-678-689-00	CASE, SHIELD, PA			
119	3-678-690-02	LABEL, PA BOARD			

CHASSIS ASSY

CHASSIS ASSY

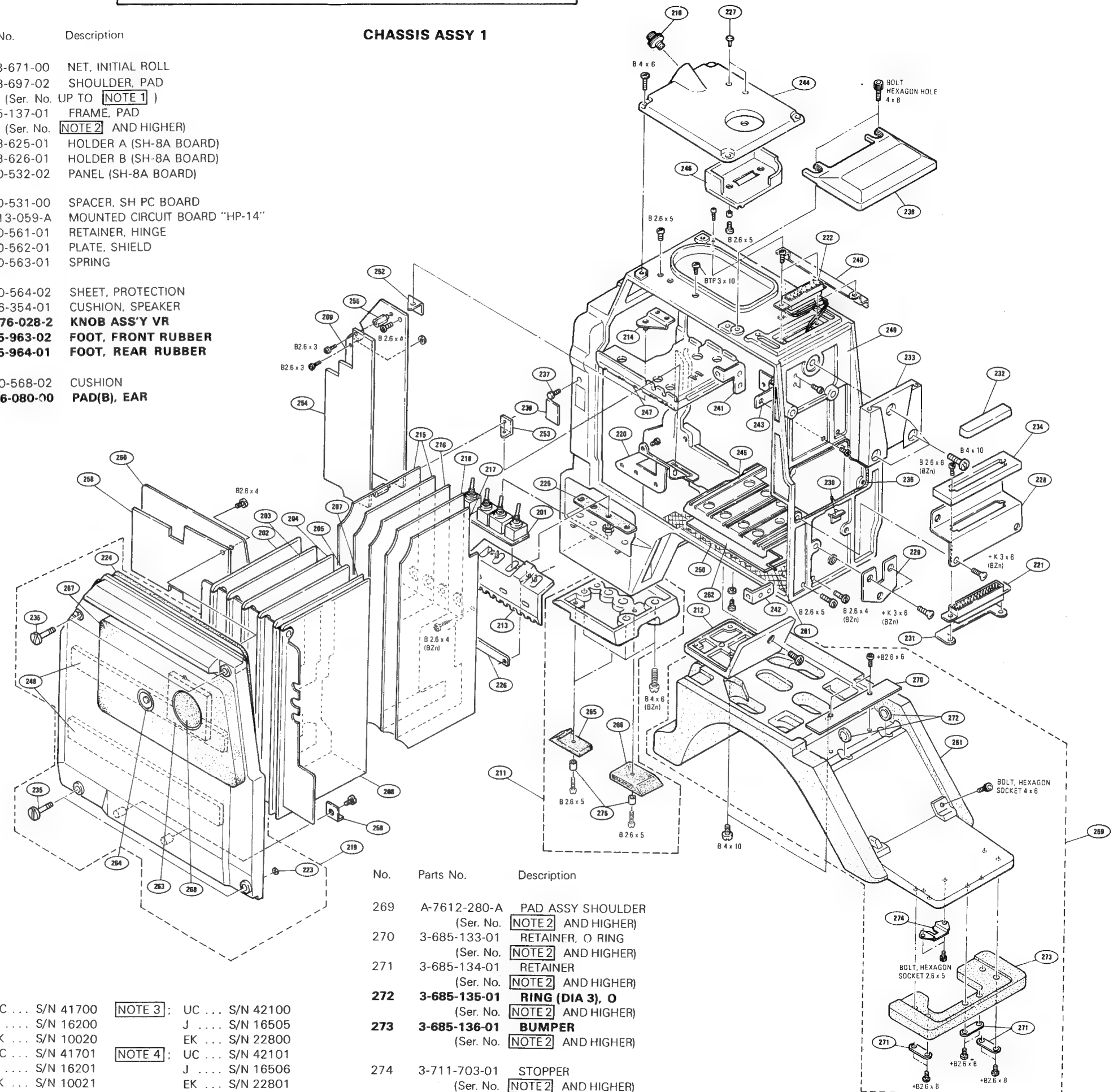
No.	Parts No.	Description
201	A-7511-886-A	MOUNTED CIRCUIT BOARD "SW-78"
202	A-7511-887-A	MOUNTED CIRCUIT BOARD "VA-14"
203	A-7511-888-A	MOUNTED CIRCUIT BOARD "DF-17"
204	A-7511-889-B	MOUNTED CIRCUIT BOARD "IE-6"
		(FOR NTSC)
	A-7511-911-B	MOUNTED CIRCUIT BOARD "IE-6P"
		(FOR PAL)
205	A-7513-356-A	MOUNTED CIRCUIT BOARD "PR-75"
207	A-7513-068-A	MOUNTED CIRCUIT BOARD "EN-33"
		(FOR NTSC)
	A-7513-070-A	MOUNTED CIRCUIT BOARD "EN-33A"
		(FOR PAL)
208	A-7511-892-A	MOUNTED CIRCUIT BOARD "PW-93"
209	A-7513-064-A	MOUNTED CIRCUIT BOARD "SH-8A"
210	X-3672-208-0	SUSPENSION ASS'Y (B)
211	X-3675-905-0	SHOE, ASS'Y
212	X-3678-601-2	LID (R) ASS'Y
213	X-3678-602-0	PLATE ASS'Y, CONTROL
	(Ser. No. UP TO NOTE3)	
	X-3678-602-2	PLATE ASS'Y, CONTROL
	(Ser. No. NOTE4 AND HIGHER)	
214	X-3678-603-0	BRACKET, (A) ASS'Y
215	X-3678-604-0	PLATE ASS'Y, SHIELD, IE
216	X-3678-605-0	PLATE ASS'Y, SHIELD, PR
217	X-3678-606-0	PLATE ASS'Y, SHIELD, PW
218	X-3678-607-0	PLATE ASS'Y, SHIELD, EN
219	X-3678-609-6	PLATE (RIGHT) ASS'Y, SIDE
220	X-3678-612-0	BRACKET, (B) ASS'Y
221	1-562-112-21	RECEPTACLE 50P MALE
222	1-934-795-11	15 PIN CONNECTOR WITH HARNESS (CN102)
223	3-672-251-00	RING (M4), O
224	3-672-253-11	RUBBER, CONDUCTIVE
225	3-672-254-00	SHEET, BRIND
226	3-672-266-00	NUT PLATE
227	3-673-018-00	SCREW, BLIND
228	3-675-902-00	BRACKET (A), CONNECTOR
229	3-675-924-00	STOPPER
230	3-675-927-00	PROTECTOR
231	3-675-929-00	NUT (50P), PLATE
232	3-675-930-00	CAP (50P PIN SIDE), DUST
233	3-675-958-02	SHOE, C
234	3-675-976-00	CUSHION
235	3-676-089-32	SCREW, LID
236	3-676-339-11	RUBBER
237	3-676-379-00	BUSHING (M5) SCREW
238	3-685-128-02	COVER (2), CONNECTOR
239	3-678-607-00	LABEL, FILTER
240	3-678-608-02	BRACKET (A), PC BOARD
241	3-678-611-00	BRACKET (C)
242	3-678-612-00	BRACKET (D)
243	3-678-630-00	REINFORCEMENT (A), HN
244	3-678-633-03	COVER, TOP

245	3-678-636-00	RAIL (LOWER)
246	3-678-637-00	RAIL (LID)
247	3-678-638-00	RAIL (UPPER)
248	3-678-687-00	CUSHION, PC BOARD
249	3-678-641-02	CABINET

No.	Parts No.	Description
250	3-678-671-00	NET, INITIAL ROLL
251	3-678-697-02	SHOULDER, PAD
	(Ser. No. UP TO NOTE1)	
	3-685-137-01	FRAME, PAD
	(Ser. No. NOTE2 AND HIGHER)	
252	3-678-625-01	HOLDER A (SH-8A BOARD)
253	3-678-626-01	HOLDER B (SH-8A BOARD)
254	3-680-532-02	PANEL (SH-8A BOARD)
255	3-680-531-00	SPACER, SH PC BOARD
258	A-7513-059-A	MOUNTED CIRCUIT BOARD "HP-14"
259	3-680-561-01	RETAINER, HINGE
260	3-680-562-01	PLATE, SHIELD
261	3-680-563-01	SPRING
262	3-680-564-02	SHEET, PROTECTION
263	3-676-354-01	CUSHION, SPEAKER
264	X-3676-028-2	KNOB ASS'Y VR
265	3-675-963-02	FOOT, FRONT RUBBER
266	3-675-964-01	FOOT, REAR RUBBER
267	3-680-568-02	CUSHION
268	3-676-080-00	PAD(B), EAR

NOTE 1 :	UC ... S/N 41700	NOTE 3 :	UC ... S/N 42100
	J ... S/N 16200		J ... S/N 16505
	EK ... S/N 10020		EK ... S/N 22800
NOTE 2 :	UC ... S/N 41701	NOTE 4 :	UC ... S/N 42101
	J ... S/N 16201		J ... S/N 16506
	EK ... S/N 10021		EK ... S/N 22801

CHASSIS ASSY 1

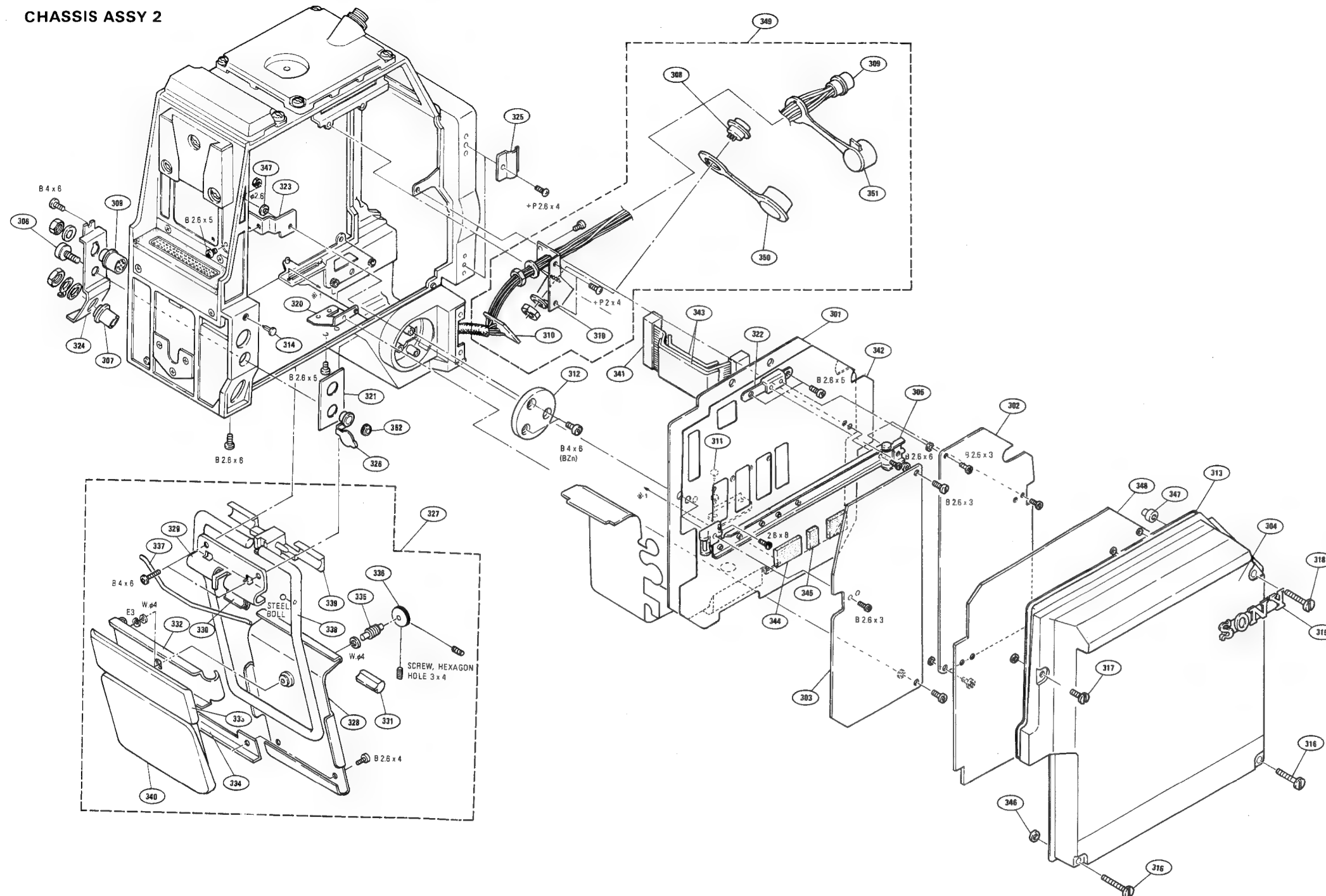


No.	Parts No.	Description
269	A-7612-280-A	PAD ASSY SHOULDER
	(Ser. No. NOTE2 AND HIGHER)	
270	3-685-133-01	RETAINER, O RING
	(Ser. No. NOTE2 AND HIGHER)	
271	3-685-134-01	RETAINER
	(Ser. No. NOTE2 AND HIGHER)	
272	3-685-135-01	RING (DIA 3), O
	(Ser. No. NOTE2 AND HIGHER)	
273	3-685-136-01	BUMPER
	(Ser. No. NOTE2 AND HIGHER)	
274	3-711-703-01	STOPPER
	(Ser. No. NOTE2 AND HIGHER)	
275	3-675-965-01	SPACER (2.6x2)

CHASSIS ASSY

CHASSIS ASSY

CHASSIS ASSY 2



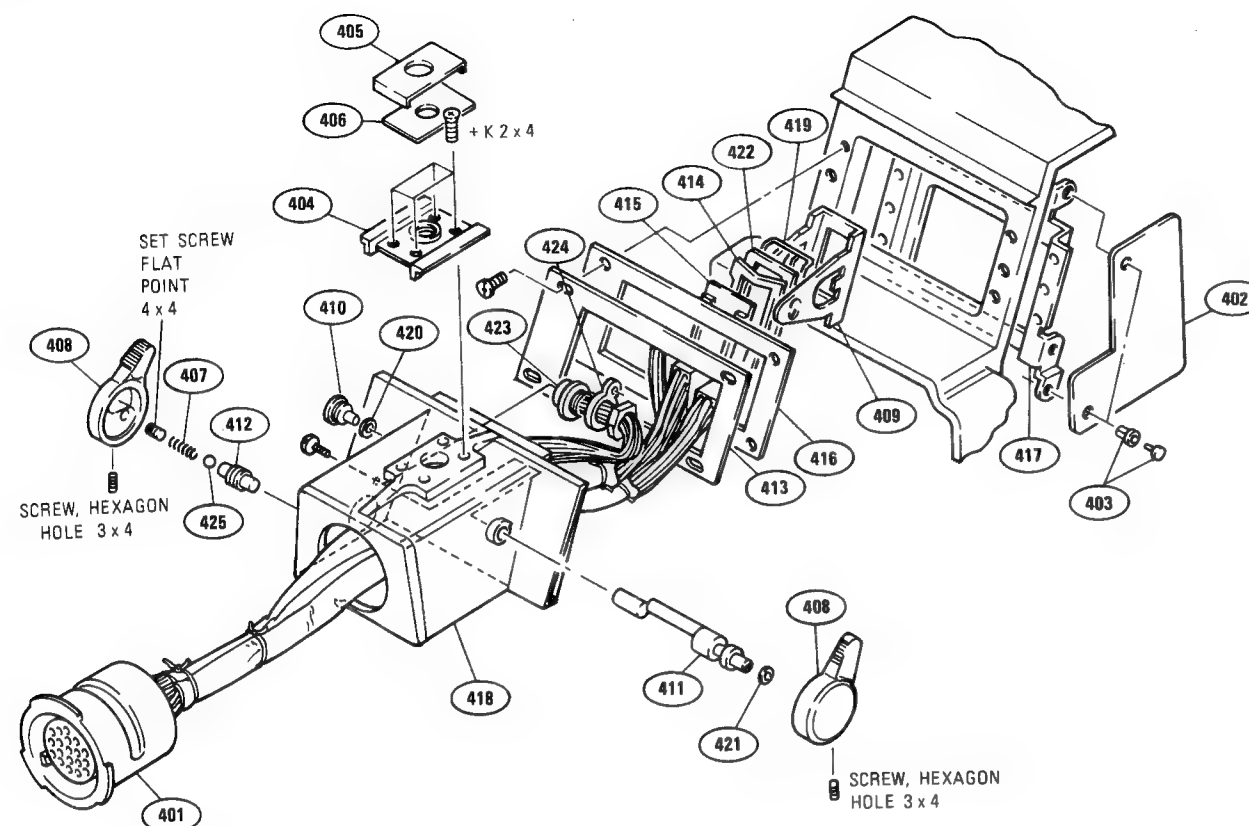
- 350 3-678-769-00 CAP
(UC ... S/N 10601 AND HIGHER)
(J ... S/N 15301 AND HIGHER)
(EK ... S/N 21001 AND HIGHER)
- 351 3-685-115-01 CAP (6P), DROP PROTECTION
(UC ... S/N 10601 AND HIGHER)
(J ... S/N 15301 AND HIGHER)
(EK ... S/N 21001 AND HIGHER)
- 352 4-866-071-01 NUT, LOCK

- 340 3-680-520-02 PAD (A)
341 1-556-764-00 50P PLUG WITH HARNESS (SH)
342 1-609-560-13 SHIELD SHEET, HN-25
343 1-609-999-00 SHIELD SHEET, HN-27
344 3-680-522-00 CUSHION, SH BOARD
- 345 4-871-307-00 RUBBER (B)
346 3-672-251-00 RING (M4), O
347 3-680-529-00 BUSHING, INSULATING
348 3-680-569-01 SHEET, INSULATING
349 1-933-829-13 CONNECTOR ASSY WITH CN-65 BOARD "LENS"

- | No. | Parts No. | Description |
|-----|-------------------------------|-------------------------------------|
| 301 | A-7513-069-A | MOUNTED CIRCUIT BOARD "HN-30" |
| 302 | A-7513-046-A | MOUNTED CIRCUIT BOARD "AT-16" |
| | A-7513-071-A | MOUNTED CIRCUIT BOARD "AT-16N" |
| 303 | A-7511-895-B | MOUNTED CIRCUIT BOARD "SG-63" |
| | | (FOR NTSC) |
| | A-7511-913-B | MOUNTED CIRCUIT BOARD "SG-63A" |
| | | (FOR PAL) |
| 304 | X-3678-610-5 | PLATE (LEFT) ASSY, SIDE |
| 305 | X-3678-611-0 | REINFORCEMENT (B) ASSY, HN |
| 306 | 1-228-450-00 | WIREWOUND 10K "PEDESTAL" RV1 |
| 307 | 1-561-781-21 | RECEPTACLE, BNC "TEST OUT" CN14 |
| 308 | 1-562-221-00 | RECEPTACLE, 12P FEMALE, "LENS" CN1 |
| 309 | 1-561-233-21 | RECEPTACLE, 6P FEMALE, "LENS" CN103 |
| 310 | 1-608-897-13 | PRINTED CIRCUIT BOARD "CN-65" |
| | (UC ... S/N UP TO 10600) | |
| | (J ... S/N UP TO 15300) | |
| | (EK ... S/N UP TO 21000) | |
| | 1-608-897-14 | PRINTED CIRCUIT BOARD "CN-65" |
| | (UC ... S/N 10601 AND HIGHER) | |
| | (J ... S/N 15301 AND HIGHER) | |
| | (EK ... S/N 21001 AND HIGHER) | |
| 311 | 3-531-576-01 | RIVET |
| 312 | 3-672-233-00 | COVER |
| 313 | 3-672-253-11 | RUBBER, CONDUCTIVE |
| 314 | 3-673-018-00 | SCREW, BLIND |
| 315 | 3-675-901-00 | ENBLEM, SONY |
| 316 | 3-676-089-13 | SCREW, LID (L 22.5) |
| 317 | 3-676-089-22 | SCREW, LID (L 11) |
| 318 | 3-676-089-51 | SCREW, LID (L 26) |
| 319 | 3-678-603-00 | PLATE (LENS), CONNECTOR |
| | (UC ... S/N UP TO 10600) | |
| | (J ... S/N UP TO 15300) | |
| | (EK ... S/N UP TO 21000) | |
| | 3-678-603-03 | PLATE (LENS), CONNECTOR |
| | (UC ... S/N 10601 AND HIGHER) | |
| | (J ... S/N 15301 AND HIGHER) | |
| | (EK ... S/N 21001 AND HIGHER) | |
| 320 | 3-678-604-00 | BRACKET (B), PC BOARD |
| 321 | 3-678-606-00 | LABEL, CONNECTOR |
| 322 | 3-678-609-00 | BRACKET (C), PC BOARD |
| 323 | 3-678-630-00 | REINFORCEMENT (A), HN |
| 324 | 3-678-683-00 | PLATE, CONNECTOR (BNC) |
| 325 | 3-678-684-00 | HOLDER, CABLE |
| 326 | 3-678-685-00 | COVER |
| 327 | A-7612-207-A | PAD ASSY |
| 328 | X-3678-615-2 | SUPPORT ASSY, PAD |
| 329 | 3-680-507-00 | BRACKET (A), STAY |
| 330 | 3-680-508-00 | PAD (A) STOPPER |
| 331 | 3-680-509-00 | PAD (B), STOPPER |
| 332 | 3-680-510-00 | BRACKET, STAY |
| 333 | 3-680-511-02 | PAD (B) |
| 334 | 3-680-512-00 | CLAMP, STAY |
| 335 | 3-680-515-00 | SCREW, STAY ADJUST |
| 336 | 3-680-516-00 | KNOB, ADJUST |
| 337 | 3-680-517-00 | SPRING |
| 338 | 3-680-518-00 | STAY, PAD |
| 339 | 3-680-519-00 | SUPPORT, STAY |

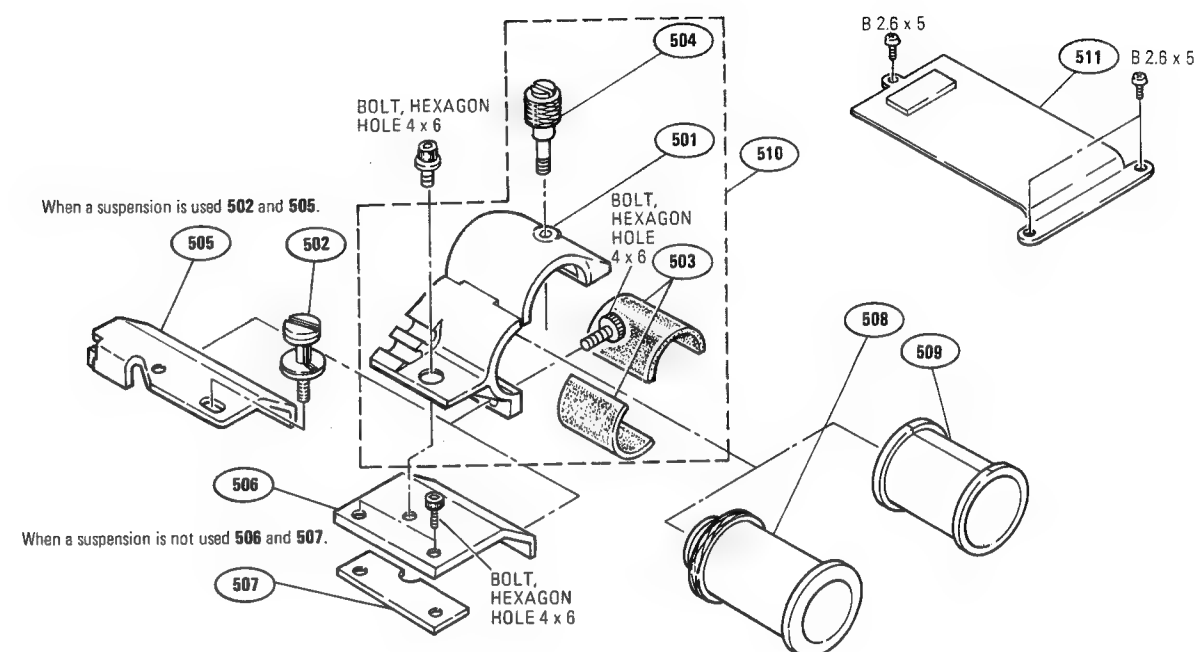
VF HOLDER MIC HOLDER

VF HOLDER



No.	Parts No.	Description	No.	Parts No.	Description
401	1-561-812-00 1-934-868-11	CONNECTOR, 20P FEMALE (CN101) VF 20P CONNECTOR WITH HARNNES (CN101)	416	3-678-656-00	PLATE, ORNAMENTAL, SLIDE BLOCK
402	A-7520-172-A	MOUNTED CIRCUIT BOARD "CN-9"	417	3-678-657-00	BRACKET (E)
403	3-531-576-00	RIVET	418	3-678-658-05	HOLDER, VF
404	3-657-700-00	BRACKET, ACCESSORY	419	3-678-670-00	SPRING
405	2-277-468-01	PLATE, ORNAMENTAL, CAMERA	420	3-701-443-11	WASHER
406	3-672-213-00	SHEET, ADHESIVE	421	3-701-444-21	WASHER, B
407	3-672-260-00	SPRING, COMPRESSION	422	3-680-521-00	SPACER, (C)
408	3-673-046-11	LEVER, LOCK	423	1-562-221-21	RECEPTACLE, 12P FEMALE (CN104)
409	3-678-646-00	CLAMP	424	3-680-560-01	BRACKET, CONNECTOR
410	3-680-566-01	SCREW (A), CLAMP	425	7-671-113-11	BALL, STEEL 3.5
411	3-678-649-02	SHAFT, CLAMP			
412	3-678-650-00	SCREW (B), STOPPER			
413	3-678-651-00	BASE, SLIDE			
414	3-678-654-00	SUPPORT, SLIDE			
415	3-678-655-00	SPACER (B), SLIDE			

MIC HOLDER



No.	Parts No.	Description
501	X-3664-502-3	HOLDER ASSY, MICROPHONE
502	X-3672-208-2	SUSPENSION ASSY (B) (FOR BVW-3A/3AP)
503	3-657-643-04	CUSHION, MICROPHONE
504	3-657-657-00	SCREW (M5)
505	3-680-578-01	PLATE (A), HOLDER, MICROPHONE (BVW-3A/3AP)
506	3-680-579-01	PLATE (B), HOLDER, MICROPHONE (BVP-3A/3AP)
507	3-680-580-01	SPACER (FOR BVP-3A/3AP)
508	3-680-581-01	HOLDER (A), MICROPHONE (FOR CRS-3P GRADE SUSPENSION)
509	3-680-582-01	HOLDER (B), MICROPHONE (FOR ϕ 19 MICROPHONE)
510	A-7401-113-B	HOLDER ASSY, MICROPHONE
511	3-680-577-01	COVER, MICROPHONE BLOCK

VF ASSY

This diagram illustrates the exploded view of a mechanical assembly, likely a camera or projector, with various components labeled by part numbers. The assembly includes a main body, a lens assembly, a viewfinder, and a mounting bracket. Key components and their assembly instructions are as follows:

- Top Assembly:** Components 646, 677, 635, 675, 634, 682, 681, 634, 683, 605, and 646 are shown. Assembly instructions include $+ B 2.6 \times 10$ and $+ B 2.6 \times 5$.
- Viewfinder Assembly:** Components 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000.
- Mounting Bracket Assembly:** Components 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000.
- Assembly Instructions:**
 - SCREW, HEXAGON HOLE 2×2.5
 - BOLT, HEXAGON HOLE 2.6×8
 - $+ B 2.6 \times 4$
 - $+ B 2.6 \times 10$
 - $+ B 2.6 \times 5$
 - $+ B 2.6 \times 4$ </

No.	Parts No.	Description
651	3-678-663-00	GUIDE, ROLLER
652	3-678-664-00	HOLDER, EYE CUP
653	3-657-841-11	SPACER (DIA 2X4)
654	3-678-667-02	RING, DIOPTER
655	3-685-119-01	RING, HOLD
656	3-678-669-00	HOLDER, DIOPTER RING
657	3-680-413-00	SEAL, RING HOLDER
658	3-680-414-00	SEAL, VF TUBE
659	3-680-416-00	RING, FIXED
660	3-680-417-00	LENS(B), VF
661	3-680-418-01	RING, O (RUBBER)
662	3-680-590-01	NAME PLATE(B) (CONTROL)
663	3-680-591-01	SUPPORT(B), CRT
664	3-680-592-01	BRACKET(A)(VF)
665	3-680-593-01	NAME PLATE(A)(CONTROL)
666	3-680-594-01	CLAMP, CRT
667	3-680-595-01	SUPPORT, ROTARY
668	3-680-596-01	GUARD, SWITCH
669	3-680-598-00	PLATE, DISPLAY
670	3-681-701-00	RETAINER(B), MICROPHONE
671	3-681-702-00	RETAINER(A), MICROPHONE
672	3-685-101-12	COVER, VF
673	3-685-102-03	VF(MAIN)
674	3-685-104-01	NUT, CONTROL
675	3-701-438-11	WASHER, 2.5
676	8-814-163-00	MICROPHONE C-2002A (WITH WINDSCREEN)
677	1-554-922-11	SWITCH, TOGGLE (\$101)
678	A-7612-223-A	LENS ASSY, CONTACT
679	7-671-154-01	STENLESS BALL 2
680	7-622-205-05	NUT, M2 TYPE2
681	9-911-840-XX	RUBBER (B)
682	3-673-055-01	CUSHION
683	3-685-116-01	INSULATOR, VF
684	3-685-118-01	SPACER, RING
	(UC ... S/N 10601 to 41270)	
	(J ... S/N 15301 to 15910)	
	(EK ... S/N 21001 to 21890)	
685	A-7403-091-A	VF ASS'Y
686	3-713-129-01	PACKING, RING (UC ... S/N 41901 AND HIGHER) (J ... S/N 16301 AND HIGHER) (EK ... S/N 22601 AND HIGHER)

TRIPOD ADAPTOR VTR BRACKET

This diagram illustrates the assembly of a mechanical component, likely a bracket or support structure. The parts are numbered as follows:

- 701**: Main base plate
- 702**: U-bolts
- 703**: Screws
- 704**: Screws
- 705**: Screws
- 706**: Screws
- 707**: Screws
- 708**: Screws
- 709**: Screws
- 710**: Screws
- 711**: Screws
- 712**: Screws
- 713**: Screws
- 714**: Screws
- 715**: Screws
- 716**: Screws
- 717**: Screws
- 718**: Screws
- 719**: Screws
- 720**: Screws
- 721**: Screws
- 722**: Screws
- 723**: Screws
- 724**: Screws
- 725**: Screws
- 726**: Screws
- 727**: Screws
- 728**: Screws
- 729**: Screws
- 730**: Screws
- 731**: Screws
- 732**: Screws
- 733**: Screws
- 734**: Screws
- 735**: Screws
- 736**: Screws
- 737**: Screws
- 738**: Screws
- 739**: Screws
- 740**: Screws
- 741**: Screws
- 742**: Screws
- 743**: Screws
- 744**: Screws
- 745**: Screws
- 746**: Screws
- 747**: Screws
- 748**: Screws
- 749**: Screws
- 750**: Screws
- 751**: Screws
- 752**: Screws
- 753**: Screws
- 754**: Screws
- 755**: Screws
- 756**: Screws
- 757**: Screws
- 758**: Screws
- 759**: Screws
- 760**: Screws
- 761**: Screws
- 762**: Screws
- 763**: Screws
- 764**: Screws
- 765**: Screws
- 766**: Screws
- 767**: Screws
- 768**: Screws
- 769**: Screws
- 770**: Screws
- 771**: Screws
- 772**: Screws
- 773**: Screws
- 774**: Screws
- 775**: Screws
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- 899**: Screws
- 900**: Screws

Key components and labels include:

- HEXAGON SOCKET HEAD BOLT 3 x 5**
- SCREW, HEXAGON HOLE 4 x 6**
- SCREW, HEXAGON HOLE 3 x 4**
- W4 (MIDDLE)**
- SPRING PIN 3 x 10**
- Cut the part after insertion.**

No.	Parts. No.	Description
741	3-687-123-01	CUSHION <div style="margin-left: 40px;"> (UC ... S/N 10501 AND HIGHER) (J ... S/N 15201 AND HIGHER) (EK ... S/N 20901 AND HIGHER) </div>
742	3-687-124-01	RETAINER <div style="margin-left: 40px;"> (UC ... S/N 10501 AND HIGHER) (J ... S/N 15201 AND HIGHER) (EK ... S/N 20901 AND HIGHER) </div>
743	3-701-446-11	WASHER, POLY 8MM DIA (0.25T)

No.	Parts No.	Description
736	3-701-441-11	WASHER, 4
737	3-701-446-01	WASHER, POLY 8MM DIA (0.13T)
		(UC ... S/N 40101 AND HIGHER)
		(J S/N 15501 AND HIGHER)
		(EK ... S/N 21201 AND HIGHER)
739	3-703-357-56	PIN. PARALLEL
		(UC ... S/N UP TO 41500)
		(J S/N UP TO 16000)
		(EK ... S/N UP TO 22000)
740	3-678-783-00	GUIDE, T SHOE

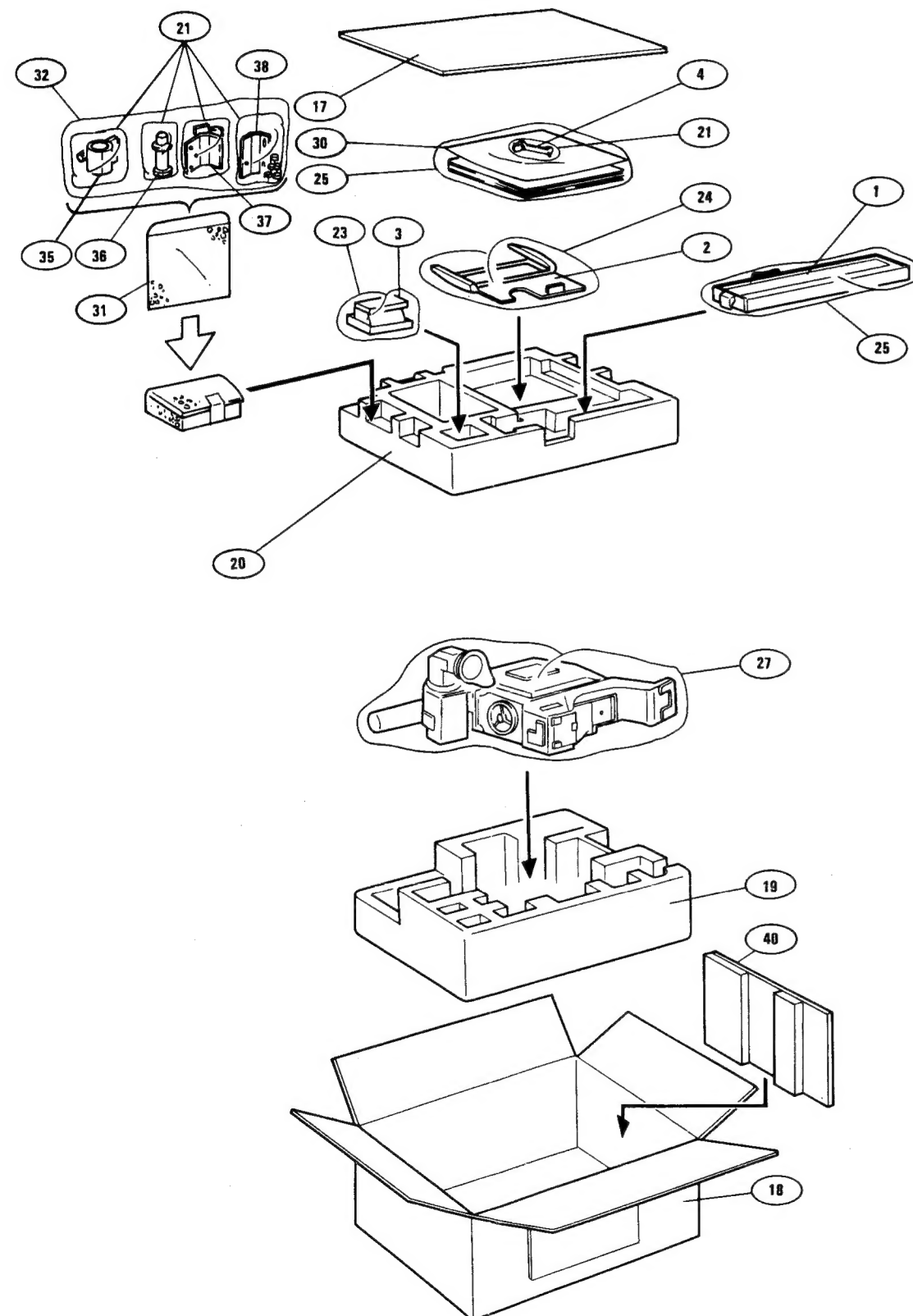
7-40

PACKING MATERIAL

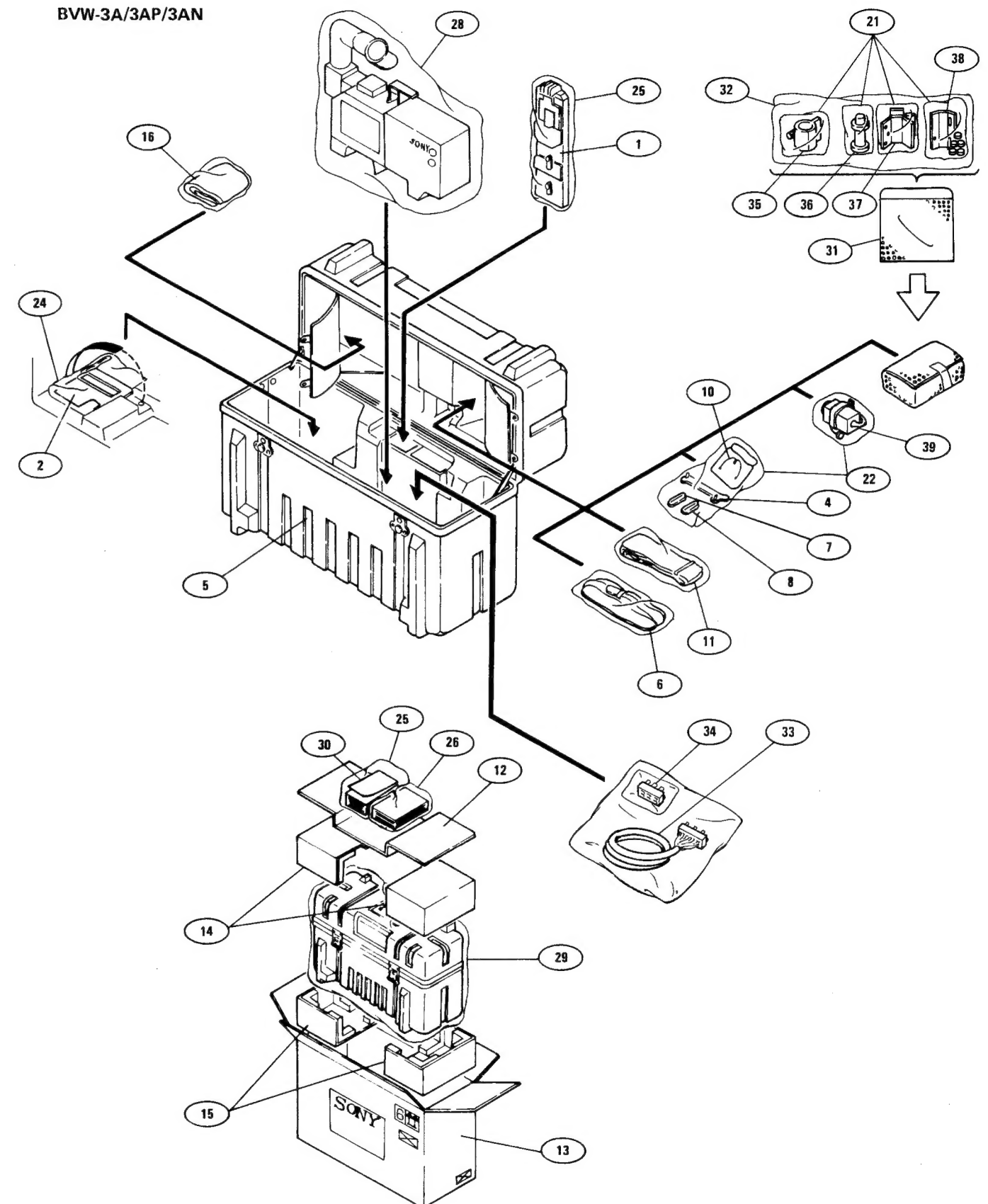
PACKING MATERIAL

7-4. PACKING MATERIAL AND ACCESSORY (SUPPLIED) BVP-3A/3AP

BVP-3A/3AP/3AN



BVW-3A/3AP/3AN



No.	Parts No.	Description
1	STANDARD PRODUCTS	
		TRIPOD ADAPTOR, VCT-12
2	A-7511-898-A	BOARD EXTENDER "EX-24"
3	A-7612-206-A	VTR BRACKET
4	X-3678-613-0	BOARD EXTRACTOR
5	X-3680-401-0	CARRYING CASE
	X-3680-406-1	CARRYING CASE (For BVW-3AN)
	A-7408-023-A	LOCK ASSY (without screw)
6	3-685-111-01	STRAP (N), SHOULDER
7	3-676-269-00	CAP, DUST (FOR VTR 50P)
8	3-675-930-00	CAP, DUST (FOR CAMERA 50P)
10	3-676-372-00	STRAP, BATTERY LID
11	3-678-732-00	BELT, CARRYING CASE
12	3-680-408-00	BOARD, TOP
13	3-680-409-00	CARTON, INDIVIDUAL
14	3-680-410-00	CUSHION, UPPER 2PCS
15	3-680-411-00	CUSHION, LOWER 2PCS
16	3-680-412-02	COVER, RAIN
17	3-680-523-00	SPACER
18	3-680-524-02	CARTON, INDIVIDUAL
19	3-680-570-02	CUSHION, LOWER
20	3-680-571-02	CUSHION, UPPER
21	3-701-619-00	BAG, POLY (FOR BOARD EXTRACTOR)
22	3-701-621-00	BAG, POLY (FOR CAP, STRAP, EXTRACTOR)
23	3-701-622-00	BAG, POLY (FOR VTR BRACKET)
24	3-701-625-00	BAG, POLY (FOR BOARD EXTENDER)
25	3-701-632-00	BAG, POLY (FOR BVP-3A/3AP) OM MANUAL, TRIPOD ADAPTOR)
26	3-701-632-00	BAG, POLY (FOR BVV-1A MANUAL)
27	3-701-643-00	BAG, POLY (FOR BVP-3A/3AP)
28	3-701-646-00	BAG, POLY (FOR BVW-3A/3AP)
29	4-332-293-00	BAG, POLY (FOR CARRYING CASE)
30	3-680-660-00	AUTO CENTERING CHART
31	3-685-105-00	BAG, PROTECTION FOR HOLDER ASSY, MICROPHONE
32	HOLDER ASSY, MICROPHONE	(REFER TO EXPLODED VIEW PAGE No. 7-36)
33	1-557-660-11	6PIN TIME CODE CABLE
34	1-562-642-11	6PIN CONNECTOR FEMALE
35	A-7401-113-A	HOLDER ASSY, MICROPHONE
	3-680-582-01	HOLDER (B), MICROPHONE
36	3-680-581-01	HOLDER (A), MICROPHONE
37	3-680-579-01	PLATE (B), HOLDER, MICROPHONE
	3-680-577-01	COVER, MICROPHONE BLOCK
	3-680-580-01	SPACER
38	3-680-578-01	PLATE (A), HOLDER, MICROPHONE
	7-721-130-20	WRENCH, L (3.0MM)
	7-688-004-02	W4, SMALL
	7-683-418-04	BOLT, HEXAGON SOCKET 4x6
	7-621-775-20	SCREW +B 2.6x5
	X-3672-208-1	SUSPENSION ASSY (B)
	1-562-642-00	HOUSING 12P
39	A-7401-028-A	BOX ASSY, REMOTE CONTROL (For BVW-3AN)
40	3-713-136-01	PLATE, SIDE (UC ... S/N 41901 AND HIGHER J ... S/N 16501 AND HIGHER EK ... S/N 22601 AND HIGHER)

BVP-3A/3AP/3AN

7-5. FIXTURE

A-7511-898-A	BOARD EXTENDER "EX-24"
X-3678-613-0	BOARD EXTRACTOR
J-6029-140-A	PATTERN BOX, PTB-500 (90 to 240Vac)
J-6029-140-2	DIFFUSION PLATE
J-6029-140-3	LAMP
J-6029-140-4	FILTER
J-6029-140-5	SWITCH, POWER
J-6029-140-6	SOCKET, LAMP
J-6026-100-A	RESOLUTION CHART
J-6026-130-A	GRAY SCALE CHART
J-6021-890-A	BALL PATTERN CHART
J-6026-120-A	REGISTRATION CHART
J-6026-110-A	MULTI BURST CHART
J-6196-080-A	DC POWER CORD (BW-608)

BVP-3AP(EK)
3-685-107-26

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